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"I cannot help plead to my countrymen, at every opportunity, to cherish all that is manly and noble in the military profession, because Peace is enervating and no man is wise enough to foretell when soldiers may be in demand again."—SHERMAN.

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First Honorable Mention.

DISCIPLINE: ITS IMPORTANCE TO AN ARMED FORCE AND THE BEST MEANS OF PROMOTING AND MAINTAINING IT IN THE UNITED STATES ARMY.

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Dans une armée la discipline doit peser comme un bouclier et non comme un joug.—RIVAROL.

HISTORY is the field in which we must delve in the study of any science. There we shall find its root and beginning; there its growth and development; there the promise of its future. And there we look to learn its effect upon the affairs of men; its importance to the world. In truth, then, "history recommends itself as the most profitable of all studies." Few subjects have interested the world or had an influence upon its condition, for good or for ill, but some one has risen to write their histories. "We have histories of medicine, of mathematics, of astronomy, commerce, chivalry, monkery" and hundreds of other institutions and sciences; and yet, albeit not one of them has set a stronger hand upon the practical affairs of nations than the science of Military Discipline; albeit none of them has marked and altered the boundaries of states and the destiny of peoples like it; still we search the shelves of our libraries in vain for its separate

history. The *Century Dictionary* even fails to recognize its right to a definition.

We must cull its achievement from the annals of the nations which have cherished it and profited by it ; or neglected it and suffered from it. Happily for our pains, however, we need seek no farther away than the boundary of Europe ; but we must go back to the era of Europe's first enlightened people. "La naquirent jadis l'ordre et la discipline," wrote Frederick the Great. He was referring to the heroic age of Greece, and to the events narrated by Homer, who has given us the first account of discipline among the Hellenic soldiery in his description of the silence, attention, obedience and rapidity of the phalanx in march and in combat. But a more certain witness to the discipline of the Grecian armies of authentic time, is found in the victory which ten thousand Athenians gained over one hundred thousand Persians under Datis and Artaphernes at Marathon ; in Xenophon's "retreat of the ten thousand" ; in the conquest of the world by Alexander's Macedonians. And we know that "discipline, unquestioning obedience, uncomplaining endurance and contempt of danger were the principles inculcated on the young Spartan from his earliest years." (*Encyclopædia Britannica*.)

Military discipline kept track with civilization and national supremacy. The enlightened, the dominant state was always its home. After Greece we must look to Rome for its progress. Here we find it in a higher state of development, possessing all that the Grecian discipline had, and besides a finer subordination, a greater obedience, a surer system, a more vigorous enforcement, and a better training. Withal, it was a manlier kind of discipline ; its effect was not "to make a soldier by unmaking a man." As much cannot be said for the discipline of Alexander's Macedonian soldiery, at least ; who by their ignominious servility to their master were induced to vote that Clitus had been justly slain, and that his body should not enjoy the rites of sepulture, when, of a truth, Alexander, in a fit of drunken rage, had murdered him. (Farrer.)

But it must not be supposed that the discipline of the legions was maintained without the infliction of punishment for crime and neglects. The punishments were terrible in many cases, but they were suited to the times and the men ; for the Romans, in the days of the Consuls, at least, were a rugged, virile people. The men were soldiers and the soldiers were men. There was no coddling

or persuasion in the enforcement of discipline, but prompt justice, which, according to Valerius Maximus, was its foundation. ("Grand Dictionnaire,"—Pierre Larouse.) And it was often a justice not tempered with mercy ; as when a legion, four thousand strong was led back to Rome, condemned and executed to a man for having sacked the city of Rhegium. It is told, as an example of the discipline of the Roman army in the time of the Consuls, that the legion of Marcus Scaurus camped in an orchard, and refrained from plucking the fruit from the heavy laden trees. Truly this was a crucial test. Nothing less than a sentinel over each tree could insure such abstinence in the armies of now-a-days.

But such discipline lived only during the time of the Consuls ; when despotism was born, discipline was dead. Under Sylla it was extinct. Augustus tried in vain to revive it in his armies. Under Tiberius the very memory of it had passed away ; and despite the efforts of Probus, and Tacitus and Claudius II. it had no existence again among Roman soldiery, until the time of Constantine. After him it declined again, and with it the Empire sank to its fall ; for there was nothing to save it, as it had been saved by the discipline of its soldiery from destruction by Brennus and afterwards by Hannibal.

There was no discipline among the Gauls. What they accomplished, was by the force of numbers and the native courage, strength and endurance of their warriors.

Under Clovis there existed a cruel and barbaric sort of discipline, among his Franks, but it could not be maintained by his successors. Three centuries later the great Charlemagne established it in his armies, and by means of it accomplished marvellous successes. But with these exceptions there was no vestige of military discipline during the Middle Ages, those long centuries, during which the sun of civilization had ceased to shine on the face of Europe. The soldiery of that time, if the word soldiery can be degraded to such use, lived by depredation and rapine. (International Encyclopedia?) The knights who composed the predatory bands were beset with jealousies one towards another ; and although brave and ardent in battle, they were too full of self-pride and ignorance to submit to any order or subordination. To this cause were due the fearful disasters of the Crusades, which left the dead bodies of two millions of Christians in the Orient. (Tytler. Pierre Larouse.) When European armies met one another in battle, victory generally rested with

the side which marshalled the greater number of combatants, or with the side whose native courage and endurance were the greater, or whose armor and weapons were the best. The *furia Francese*, which carried the French troops "victorious over so many obstacles" evaporated before "the stern resolve, the calm, unflinching endurance, which distinguished the Spanish soldier." (Prescott.) And Voltaire attributes the advantages of the English over the French in the plains of Cressy, Poictiers, and Agincourt, to "that calm courage in the midst of tumult, that serenity of soul in danger, which the English call a *cool head*." (Creasy.) But due credit must be given to the long bows of the archers.

It was during these dark times that the East sent forth a train of hosts to astonish the world with their conquests. First came the Saracens, who starting in the sixth century under Mahomet, and continuing under his successors, Abubeker, Omar, the Ommiades, and the Abassidae, did not halt in their march of conquest until they had set their dominion upon the territory of Asia, Africa and Europe. In 713 they crossed the Straits of Gibraltar and, within thirty months, had conquered the Visigoths, and established their dominion in Spain, where it lasted for seven centuries. The only law these warriors knew was the Koran; but their faith in its teachings, and their subordination to its precepts were sufficient to answer for discipline.

Then came the Turks, in the eleventh century, to wrest the sceptre from the Caliphs, and to batter at the gates of Constantinople till they forced them to yield in 1453. And the Empire of the East was at an end. Not, however, until Timour, descendant of the great Genghis-Khan, after subduing Persia, India and Syria, had invaded the domain of the Turks, and put to rout what were left of the Sultan's army "whose numbers almost surpass credibility." "Three hundred and forty thousand are said to have fallen in the field." (Tytler.)

Yet, from the history of all these wars we learn no lessons in the science of discipline. The word had no place among such soldiers. Superstition and abject fear of the autocrat were their government; death and no quarter to the foe their motto.

It was probably among the mountains of Switzerland that military discipline had its awakening in Europe. No less than sixty pitched battles the Swiss fought with the Austrians for their independence; but they won it, and to this day have kept it. And they won, besides, a fame for courage and discipline, which

stretched across Europe; survived the slaughter at the Tuileries, and will live forever in the Lion of Lucerne.

We now look to the valorous Spaniards of Ferdinand and Isabella, and learn that the wonderful achievements of the "Great Captain" were no less due to his own genius than to the sturdy fortitude and discipline of his warriors. (Brabazon.)

The Great Frederick, however, said that "*la discipline sorti de son tombeau sous le grand Charles Quint.*" But Frederick, no doubt, had reference to the standard of discipline maintained in his forces. The patriotic, freedom-loving discipline of the Swiss was not of that kind. And, in spite of the great king's praise, the "sack of Rome and the horrors of Harlem" have left an indelible stain on the reputation of Charles' troops. ("Dictionnaire de L'Armée de Terre."—Bardin.)

M. Sicard believes that the earliest ordinances touching military discipline among the French bear the dates of 1318 and 1439. ("Grand Dictionnaire Universel."—Larouse.) But if we except the short reign of Henry IV. in which there appeared "a gleam of reviving discipline," anarchy reigned in the French armies up to the time of Mazarin. (Bardin. Larouse.)

Louis XIV. had some regulations written for the government of his troops; and Martinet undertook to enforce them with an instrument of his own invention, yet discipline existed more in the letter than in the fact, and Martinet's name has come down to posterity only in the shape of an odious word.

But let us look to another quarter of Europe, and behold the order and discipline which characterized the triumphant march of the army of Gustavus Adolphus through Germany. For eight years fire, pillage and the sack of cities had marked the passage of the troops under Tilly and Wallenstein; on the contrary in the Swedish army, theft, gambling, the duel, and marauding were repressed with inflexible severity. One does not know which to admire most, the devotion of the soldiers, the moderation of their conduct, the purity of their manners, the dash of their bravery; or the simplicity of their officers under the example of their king.

Later on we find an imitation of this orderly exactness in the troops of Charles XII.; but the discipline was harsh and sombre, like that of the Duke of Alva, and like Charles himself, while that of Gustavus was moderate though severe.

Peter the Great, who may be called the pupil of Charles XII.,

introduced into his forces the brutality of Swedish discipline. ("Dictionnaire de L'Armée de Terre."—Bardin.) But to the Russians it was better suited as was proved at Pultowa, where their great Czar "taught them to face and beat the previously invincible Swedes; and (who) made stubborn valor and implicit subordination, from that time forth, the distinguishing characteristics of the Russian soldiery, which had, before his time, been a mere disorderly and irresolute rabble." (Creasy.)

This brings us down to the eighteenth century, and for the first time we must go to Prussia to find the best disciplined army of Europe. This army was led to victory and fame by Frederick the Great, but it was left to him ready made by his father. Frederick William I. was "passionately fond of military exercises," and he spent his time and treasure in organizing and perfecting his military forces. He was the cutler who made the blade, but his son was the warrior who used it. He left it dull and imperfect, but Frederick whetted it and sharpened it to his own use. The discipline of the father sought more after smart appearance than reality,—tall soldiers, waxed hoofs, braided and beribboned manes, polished and burnished trappings. The decorative part the son discarded; but he added to the real. (Brabazon.)

The means by which Frederick maintained such rigid discipline were often of a severity worthy of a more barbarous age. The dogma of Valerius Maximus, that "military discipline is sustained only by severe and pitiless punishments" was adhered to to the letter; and the philosopher Helvetius must have had the Prussians of Frederick in mind, when he wrote, after the motto of the Spartan general Clearchus, that "discipline is but the art of inspiring soldiers with more fear of their own officers than they have of the enemy." (Farrer.) Only by such a system could it have been possible to keep his men in ranks, since a large number of them were recruited by kidnapping over the border in Austria and France.

The infliction of cruel and arbitrary punishments was not confined to the rank and file of the army, as the story of Captain Zietern's pitiable fate proves. One night during the campaign of Silesia, the great king was making the rounds of his camp, and discovered a light burning in that officer's tent. Frederick entered and found the occupant sealing a letter to his wife.

"What are you doing there?" demanded the king. "Do you not know my order?"

Captain Zietern dropped upon his knee and begged for pardon and mercy.

"Sit down," the sovereign ordered, "and add this postscript."

The officer wrote at Frederick's dictation, "To-morrow I shall die on the scaffold"; and on the morrow he was executed. ("Grand Dictionnaire Universel."—Larouse.)

But with all its harshness, the Prussian discipline had the advantage of resting upon rules well known, precise and observed. Its uniformity was unalterable, and imposed itself upon the king as well as upon his humblest soldier. And it was in harmony with the political laws and manners of the country. ("Dictionnaire de L'Armée de Terre."—Bardin.)

The strong hand of Oliver Cromwell was the first to introduce discipline into the British ranks, and the result was, in the opinion of General Wolseley, an army "the finest by far in every respect that we know of in modern history." (Armies of To-day.) After his death we find nothing to commend in the discipline of the British, until, in the wars of Queen Anne's reign, it acquired, under Marlborough a "European reputation." (Encyclopædia Britannica.) Later on, after it had been tempered and hardened in the campaigns of the Peninsula and proved in the fire of Waterloo, where it had, in the hands of its great commander, carved out its eternal fame, the English army possessed "the most solidly founded reputation of any in Europe." It was of the men of this army that Napoleon was speaking, when he said that "a French soldier would not be equal to more than one English soldier, but he would not be afraid to meet two Dutchmen, Prussians, or soldiers of the Confederation." (Montholon's "Memoirs.")

It was within a few years only of this time, that the French army had acquired its world-renowned reputation for steadiness, bravery and discipline. When Louis XVI. ascended the throne, he found his army in a miserable condition; and, although he and his officers made some efforts at reform and accomplished some improvement, it was not enough to prevent his troops from deserting him when his hour of peril came. The heroic Swiss guard alone stood true, and they paid with their lives for their fidelity. (Alison.)

When the allies first threatened the invasion of France, the

Carmagnoles flocked to the frontier from every quarter to oppose them. They were filled with patriotism and warlike spirit, but devoid of training and discipline—not soldiers at all, but wild, disorderly rabbles. They hurried across the frontier with ardor and enthusiasm, "but the first flash of an Austrian sabre, or the first sound of an Austrian gun was enough to discomfit them." At the first sight of the Austrians they broke and ran without firing a shot, just as mobs will always do before well-disciplined troops. (Creasy.) But these very same men, after they had been schooled to order and subordination by Dumouriez, met and defeated veterans who had trained under the eye of Frederick the Great. It was then heart and soul combined with discipline, against discipline alone. The combination will always win. But the latter is always an overmatch for heart and soul without discipline.

The French never have set the standard of military discipline pure and simple, for the world. But their warlike spirit, and a love of country and bitterness of hate toward that country's foes, scarcely equalled among any other people, have so far made up for lack of discipline as to have accomplished marvelous feats, when directed by genius. Napoleon's successes are the proof of this. The discipline of his troops never rested upon a solid basis. His officers and men had such unbounded confidence in his genius, that wherever his presence was felt order prevailed. But the moment he was absent, insubordination and indiscipline began; and began where it should last have been, for it was his marshals who set the worst example. They had never learned the first lesson of command. They did not know how to obey but one man. Even Ney, the bravest of the brave, could not brook the command of another. Nor could the discipline of French soldiers stand the test of reverses, even though the Little Corporal were with them. Witness Moscow.

In the war of 1870-71, particularly the second chapter of it, French war-spirit and love of country were opposed to German discipline and training, and the result was what might have been expected. Since that war every nation of continental Europe has been putting forth its last efforts, and draining the last source of its exchequer to raise and perfect its troops; and he would be rash indeed, who should undertake to say which one has attained the highest standard of excellence. The test will come with the great conflict the wise-acres are constantly prophesying, and the

press correspondents are yearly sighting the "clouds" of, on the vernal skies.

Discipline is the boundary which defines an army, and distinguishes it from a rabble. In so far as this boundary is broad and well marked, just so far does the army differ from a mob. It includes all that makes and belongs to the army. Within it, the army is upon its own sure domain, and is as strong and confident as an ancient baron in his own castle; without it, the army has no footing to stand upon, and must fall or go to pieces. Better that an army should have no arms than no discipline; for in the first case, it would at least be harmless and might escape from the enemy by an orderly flight; but in the second, it would be a prey to the foe and a scourge to itself and its friends.

From the earliest times, philosophers and soldiers have dwelt upon the necessity of order and discipline to a fighting force; and historians have recorded the successes due to them. It was a maxim of Socrates, that order and discipline were the most important articles of an army; and that without them, it was of no use. (Marshal Puyfegur.) And he has been followed in this opinion by every great thinker since his time. According to Marshal Saxe, "it is the soul of armies; and unless it is established amongst them with great prudence and supported with unshaken resolution, they are no better than so many contemptible heaps of rabbles. It is the basis and foundation of the art of war." (Memoirs of Marshal Saxe.) And the great Austrian soldier, Count Montecuculi, who, in the victory of St. Gotthard, won the first positive triumph of European tactics and discipline over the mere numbers and daring of Ottoman hosts (International Encyclopedia), left us his opinion, that "nothing can be so necessary to the soldier as discipline. Without it, troops may become more dangerous than useful; more hurtful to ourselves than to our enemies." Professor Bryce says, that the greatest discovery ever made in the art of war, is that organization and discipline count for more than numbers. Napoleon thought that the causes of victories and defeats were, first of all, in the heads and hearts of soldiers and their commanders. But heads and hearts undisciplined are more sure causes of defeats than of victories. General Blondel says, "discipline and subordination are the thongs of the fasces, by these the horde becomes a unit, a quickened body, a colossus capable of the most gigantic efforts." (Derrecagaix.) The French statesman, De Custine, spoke truth, when he stated

with reference to the first troops of the Revolution, that "an army without discipline is an army lost"; as did also the eloquent Lamartine, when he said that "order and honor are the two essentials of an army: without discipline there is no army."

And we might multiply into volumes the eloquent tributes that have been paid by the world's great men to the value and importance of military discipline.

They all point to the single truth, that discipline is the alpha and omega of the soldier's trade. The historians tell us what it has achieved against all the odds of war in the past, from which we can estimate its value in the future; for every change and advance in the military science adds to its importance. There can be no doubt that discipline counts for more in battle to-day than it did in the days when men fought in great, compact masses. It has more to do with tactics than with strategy, with the conduct of the battle than with the campaign as a whole, with victory and defeat on the field than with the advance and retreat of armies. But the tactics of the ancients were very simple, and required little training of the individual, beyond enough to make him obedient under the eye of his commander, and to give him skill with his weapon, and strength of body and endurance. Plato tells us that discipline declined among the Greeks when they gave up the Pyrrhic dance. In our time every phase of a battle is complicated, and the part which every man must play, especially in the open order "rushes," with long-range, accurate, quick-firing rifles, calls for a discipline and a courage far beyond what the ancient method required. Truer than ever is General Blondel's maxim, that "all soldierly virtues are embraced in these two: discipline and courage." (Derrécagaix.)

Yet, among the ancients discipline achieved more than any other article of the military science. To whatever collateral or partial causes we may attribute the successes of some of the warlike enterprises of the Romans, the great and leading cause of their rapid and extensive conquests was nothing else than the excellence of their military discipline, as compared to that of the nations they subdued. "It was not," says Vegetius, "to the superiority of numbers, nor to superior courage in the field that they owed their victories; but it was by art and by discipline that they defeated those immense hosts of Gauls, which poured down upon Italy; that they subdued the Spaniards, a harder and more warlike race than themselves; the Africans, whose

wealth furnished inexhaustible armies; and conquered even the Greeks, whose military abilities were for many ages superior to their own." Marshal Saxe gave his judgment to the same opinion. And nothing did more to hasten the downfall of the Roman empire than the decline of discipline in the army. When the latter became debauched, mutinous, and disorderly, the hordes of barbarians from the north swept down upon the fair land of Italy and overran it.

If then, military discipline was of so great importance in ancient warfare, what must be its importance in that of the future? If all the fearful inventions which the last few years have brought forth, redeem by half their promises of destruction in the next war, how will men be induced to face them in the battle-field? If there be an answer to this question it must be, by discipline. No man has innate courage enough for such an ordeal. Even courage and patriotism joined will not be enough. They have proved weak against the terrors of muzzle-loading battle fire, which is to the fire we are to expect hereafter, as the Indian arrow was to the minie-ball. But courage, patriotism, and discipline are a trinity which will stand even unto certain death.

Writing of the terror-stricken men who had fled from the field at Shiloh, General Grant says, "there probably were as many as four or five thousand stragglers lying under cover of the river bluff, panic-stricken, most of whom would have been shot where they lay, without resistance, before they would have taken muskets and marched to the front to protect themselves. * * * Most of these men afterward proved themselves as gallant as any of those who saved the battle from which they had deserted." The change in them, apparently in their courage and patriotism, was brought about by the school of discipline they were put to in the actual service of their country,—the best school, no doubt, for the soldier.

There is no moment of the soldier's life when discipline is not important, and it is hard to name the moment when it is most so. In time of hostilities the soldier's life is full of trials and hardships. The battle with all its carnage and death is not the half of what he has to suffer. The long weary marches, the dreary camp, the perilous reconnaissance, the tiresome, sleepless outpost, the fever and nostalgia, the exposure to cold and wet, the hunger and thirst, make up the rest. Discipline alone enables him to alleviate some and bear manfully the rest. It teaches him

to take care of himself and preserve his strength and health for the service of his country. Nothing speaks worse for the discipline of the volunteer service of the War of Secession, than the great number of deaths, upwards of one hundred and seventy thousand, from disease. On a long march, especially a forced march, undisciplined troops straggle from one end of the road to the other; and the next step after straggling is desertion. A reconnaissance without discipline is a farce, but a hazardous farce, which is apt to lead to the capture of the party making it; and outpost duty without discipline is a false security which an army might better be rid of. Hunger and indiscipline make a sure covenant for pillage; and when soldiers pillage they cease to be soldiers, and become freebooters, and they ought to be dealt with as such. The ills which indiscipline may bring upon a prolonged encampment are as numerous as the diseases of the flesh, and as various.

But in battle, of what use is an undisciplined man? If he can be prodded from behind the rocks and stumps and driven to the front at all, he will shoot his cartridges away without doing the enemy any damage whatever. In the Chilian war of 1891, the only one in which the modern rifle has been put to actual use, the Congressional troops carried 180 cartridges apiece into the fight on August 21, and many detachments of them had fired their last cartridge within a half to three quarters of an hour. "The infantry as a whole, at the close of the battle, had only six rounds left, and it was impossible to replenish their ammunition till next morning; that is to say, they would have been helpless against another attack." (Lieut. Stewart Murray.) Captain Mayne, whose book on fire tactics is an acknowledged authority and a text book at our service schools, says, touching the means of making the fire effective, "men must be taught in peace practice to attach themselves to the nearest commander and to obey the rank, and not merely the person only, so as to accustom them to obey strange leaders when under them. Two things are necessary for this. * * * ; and (2) discipline among the men." The great difficulty will be to make men aim and fire with deliberation, and save their ammunition for the decisive moment; which discipline alone can do.

It is doubtful which crisis most needs discipline in soldiers,—victory or defeat. Without it victory cannot complete itself; with it defeat cannot be driven into rout. Generals may select

faulty positions, may bring on the fight at the wrong place or time, may make all manner of mistakes, and yet not bring destruction upon their troops, provided the discipline of the latter is of the highest order. But what use can he make of undisciplined soldiers, even though by some stroke of genius or fortune he has defeated the enemy and driven him from the field. His men stop to rob the dead when they should be in pursuit; disorder and confusion reign supreme; regiments and brigades cannot be gathered together; brigade and division commanders ordered to pursue, reply that their men are broken down with the hard day's work and cannot be induced to follow another step. Meantime, with banners flying, the defeated army, whose trains are well away in the lead, marches orderly away under cover of its gallant rear guard, and by the fall of night is twenty miles beyond the reach of its victors. But let the conditions be reversed, and what happens? The defeated army goes to pieces, *sauve qui peut* becomes the cry; withdrawal turns to flight, retreat to rout; caissons and wagons block the road; drivers cut their traces and gallop away, leaving their wagons jammed in with dozens of others on the bridges; while the enemy with order and deliberation plow furrows through the rabble with shrapnel from the rear; the squadrons of cavalry gallop ahead and cut off their disorderly flight, and the battalions of infantry form on their flank and mow them down with rifle fire, and capture them by the thousands. The upshot of it is, the army is destroyed.

Perhaps no effect of military discipline is greater or more important than the confidence it imparts to every one, from the commander-in-chief down. It justifies the general in undertaking enterprises which, without such assurance, he could not dare attempt. Before the battle of Blenheim the Duke of Marlborough's generals remonstrated with him against attacking the strong position of the French. "I know the danger," the duke replied, "and I rely on the bravery and discipline of the troops, which will make amends for our disadvantages." (Creasy.) The chief knows that his corps and division commanders will do their utmost to accomplish his purpose, no matter whether their judgment approves or no. He knows that every officer and man can be counted upon to do to the fullest his individual part. He knows every brigade and regiment will be in its place at the appointed time, and will stay where it is ordered, against every hazard. He knows that when he says to a colonel, "You are to

die there with your battalion," that the simple, heroic answer will be, "Yes, General." (Derrecagaix.) With it no officer needs to ask himself whether his men will follow him into the thick; whether they will desert him in case he meets overwhelming numbers of the enemy. His whole mind can be centred upon what he shall do, and not diverted to consider what his men will do. They will do what he orders, and he knows it. They will go where he leads, and stay while he stays.

And every man knows that his comrades are with him. He does not look back to see if the rest are advancing; he has no fear that his fellows on the right have lagged behind a clump of boulders, or that those on his left have dropped down in a ditch for shelter. His only fear is that he himself may be lagging; and fixing his eye in the direction of the foe, he quickens his strides forward. But it is not in the great wars of the nation that the discipline of troops is put to the most trying test. It is in the fearful riots with which our great cities have become all too familiar within the last two decades. There also this immense preponderance over disorderly, headless, numbers, finds its strongest manifestation. When two batteries of artillery got out of the cars at Pittsburg in 1877, and, without firing a shot, dispersed the rabble of thousands of desperate men and women which held the undisciplined militia beleagured in the round house, and the citizens in a state of terror, it taught a lesson in discipline which the people ought not to forget in a hundred years. The National Guard of the great State of Pennsylvania were the first to heed the lesson, and how well they profited by it was shown in their soldierly behavior at Homestead a few years later.

The recent events in Chicago have repeated the lesson. The ease with which a troop of cavalry, in which the grim face of every man told that he was there to obey orders and do his duty, rode through a mob of ten thousand and cleared the way for a passing railway train, showed the magic power of discipline. Had a tremor of hesitation appeared in the ranks of that handful of men, every one of them would have been dragged from his saddle and beaten or trampled to death. But as it was, the rabble parted, and spent its wrath and fury in harmless oaths and denunciations and in threats of vengeance; to all of which the cavalrymen were deaf.

Of like character was the conduct of the artillery and infantry on duty there, and of like effect. Indeed so excellent did our little army perform its part wherever it was called upon in the recent

crisis, that one hesitates to make suggestions for its improvement. Only the belief that perfection is impossible in anything human, justifies such suggestions. When our public press and the people at large are brought to commend the "regulars," and find no fault in them, it should seem that the high-water mark of perfection had been reached. But their motto must be *toujours en avant!*

At no time is the welfare of the service more dependent upon the discipline of soldiers than while they are in the peace and inaction of garrison. Then more than ever must they remember that the eye of criticism is upon them, a criticism heartless, often unjust, and always rejoicing in fault-finding more than in praise. If one soldier,—and by soldier is meant officer as well as enlisted man,—is seen drunk in a town, it is remembered as long as there is a tradition left in the place; and it is remembered as an act of the whole army. Hundreds may appear there sober and orderly and soon be forgotten. What joy it appears to afford the civilian to pass through a military post and see a squad of prisoners under guard! But the American soldier, of all others, wants the goodwill and respect of his people. He wants to be known to them as an orderly, honorable, and above all a patriotic citizen. He should do his utmost to lift the tone of the service, and gain for it the affection of the best classes of our citizens. In this way he will benefit the social position of the service, win the good opinion of the law-makers, and with it their liberality, upon which his pay and all his material comforts depend; and he will invite and encourage the best class of young men to enlist in the ranks.

Discipline is a French word, of course, but its adoption by the English, the Dutch and the German languages, in its military use, would indicate that it possessed a shade of meaning not found in words native to these languages. Indeed its signification has not always been precise, and has undergone several changes during its life. Its meaning, in truth, is various to-day, depending upon the period of history, or the military system to which it refers. The changes, however, have been rather as to how much the word meant, than as to what it meant. It has always signified a certain notion, but at different periods it has comprehended more or less besides this certain notion. The pivot of the signification has always been conduct, behavior. If at times the comprehension has stretched out so as to take in a greater field of ideas, it has not ceased to be bound to the pivotal idea of conduct.

In the eye of antiquity discipline was the art of training soldiers; of subjecting them to the restraints of military service, and teaching them to move at signal. Its object was to render men quick and strong of movement, both as individuals and as bodies; and to inculcate on them respect for their commanders. Discipline, subordination, drill and tactics were the same. In considering the effect which their acceptance gives the word, the ancients tell us that the neglect of discipline for even a moment, may ruin the military system of a nation for a long train of years, and result in the fall of the nation itself. From this cause fell Rome and Byzantium. The art of war among them was founded upon military discipline. In Dubellay's book (1535) the oldest French work on the subject, the word begins to take a modified meaning. It no longer expresses the whole science of arms, but a limited part of it, the regular education, instruction and daily care of the men. Later in the same century we find its definition to be the observance of military rules and customs. Next we find it signifying the exercise of military justice, with special reference to the punishment of neglects and crimes. It is fast losing the beautiful and noble aspect it bore in the palmy days of Greece and Rome. Then its function was to render patriotism soldierly and effective, for the safety of the state. Now it was simply to compel obedience and subjection, for the security of a throne. Cruel and arbitrary punishments were the means it made use of, and machine-like regularity and action in ranks, the criterion it sought after. Barbarous punishments enforced obedience, and corporal chastisement corrected mistakes and omissions. Discipline was truly a hateful word. Upon many lips it was synonymous with the stick carried by the file-closers, the cat-o'-nine tails, blows, imprisonment, the knout, and the flogging.

Such was the discipline of the army, with which Frederick II. conquered the title of "The Great."

After 1788 the word changed its meaning again, so as to have reference less to punishment than to the repression of irregularities. This was especially so in France, where the idea of freedom and the state was beginning to dawn out of the dark thralldom of the monarchy. Discipline was beginning to work back to its old Roman purpose, the accomplishment of national greatness and personal liberty. From that day to this the word has gradually risen from the degradation into which it had sunken, to its old patrician sense.

The definition given in James' *Military dictionary* published in 1802 (London), is that "Discipline in a military sense, signifies the instruction and government of soldiers. By Military Constitution is meant the authoritative, prescribed laws for the guidance of all military men, and all military matters; and by Discipline is meant the obedience to and exercise of those laws. As health is to the natural body, so is sound military constitution to the military one; and as exercise is to the first, so is discipline to the last. Bravery will perchance gain a battle; but every one knows that by discipline alone the long-disputed prize of a war can be ultimately obtained."

Colonel Duane, of the American army, copied the foregoing definition verbatim in his *Military Dictionary* published in 1810. Our *Army Regulations* of 1821 has this paragraph: "Discipline; Correction, or enforcement of subordination, the award and infliction of punishment consequent on a breach of that subordination; that is, consequent on the neglect or breach of some duty. This strict sense is employed in contradistinction to the general or popular one, which makes discipline include also the police and instruction."

The definition given in Colonel Scott's *Military Dictionary* is a translation of that found in *Bardin's Dictionnaire de L'Armée de Terre* so liberally drawn upon in the preparation of this paper; and Lieutenant Farrow, in his *Military Encyclopedia*, copied Colonel Scott's translation literatim.

Captain Wilhelm's *Military Dictionary and Gazetteer* (1881) gives this definition: "Discipline in Military and naval affairs is a general name for the rules and regulations prescribed and enforced for the proper conduct and subordination of the soldiers, etc. This is the technical meaning. In a higher sense discipline is the habit of obedience. The soldier acquires the habit of subordinating his own will, pleasure and inclinations to those of his superior. When the habit has become so strong that it is second nature, the soldier is disciplined."

It is doubtful if any of these definitions and explanations tell precisely what we understand by the word to-day. Of a truth, the meaning is so subtle that the more our lexicographers define and elucidate it, the farther away from them it seems to get. Captain Wilhelm comes nearest the true signification in the "higher sense" of the word. But were the "will, pleasure, and inclination" of the superior, the colonel of the regiment, for in-

stance, that his men should plunder and pillage and burn and destroy, could they be regarded as disciplined soldiers if they did his will, etc.? And his definition has reference always to some one higher. His discipline imposes no obligation upon the superior; suggests no line of conduct towards the inferior. But true discipline has a higher and a nobler meaning for the soldier. It binds the superior as well as the inferior, the commander-in-chief as well as the private. It guards the rights of every one; it fixes the duty of every soldier toward every other; and it requires of all grades alike a cheerful and manly obedience to the articles and regulations of the military service, and to the laws of the land. It is, in short, *right conduct* under every circumstance and at all times.

Two incentives to right conduct among soldiers, as far apart as different means to the same end can ever be, are usually recognized; namely, fear and hope—the fear of punishment, the hope of reward. Who can question which produces the most willing, the most manly sort of conduct? Who but thinks, “a soldier ought to fear nothing but God and dishonor”? (“Military Manners and Customs.”—Farrer.) The harsh and gloomy discipline of Charles XII., and the automatic, rigid, but hateful discipline of Frederick the Great, were founded upon the first incentive. The ever ready, active, valiant, if not always enduring, discipline of Napoleon’s Frenchmen upon the other. The hope of winning their epaulets or the approval of the Emperor would take them into the very jaws of death. But there is still another, a higher and more praiseworthy motive, which actuates men to the observance of discipline; it is *pride* in the service. A conduct founded upon this motive needs no watching. It seeks no publication for the sake of reward, and no concealment for the fear of punishment. There are but two higher motives to discipline; duty and patriotism. But discipline for duty’s sake is more than we dare count upon among human soldiers; even though it was the motive which inspired the Swedes of Gustavus Adolphus, who with *Eine feste Burg ist unser Gott* upon their lips, always went into battle for victory. (International Cyclopedias.)

Patriotism is too apt to be joined with a hatred of the country’s enemy, to impose a practical restraint upon troops in time of war; and in time of peace its practical influence is not felt in the daily routine. The soldier’s pride, then, is what must be appealed to and cultivated, to attain the highest practicable state

of discipline. The other first two incentives must not however be disregarded. The hope of bettering their condition by soldierly bearing and the best performance of duty, must always be held out to the worthy men ; and the certainty of a prompt and just penalty for neglect, to the unworthy.

The way to increase a man's pride in the service is to make the service something to be proud of; to eliminate from it whatever there is to be ashamed of.

One of the first principles of the science of military discipline is that "it varies with the political institutions of the people, with their manners, their character, their usages, the form of their government, and the direction of their laws." Is the principle conformed to the American army? Have we not servilely copied everything from the English, as we have copied the useless parts of our drill and equipment from other services? With all of our inventive genius, with all of our vaunted originality and independent Americanism ; in whatever affects the discipline of the army we have originated nothing. There is nothing of a purely American type about our system. In our Articles of War, the rock upon which our present system rests, there are anachronisms which should not have survived the first Mutiny Act. They are absurdities in our time, and when they are considered at all, it is only for the sake of jest and derision. But whatever touches the discipline of soldiers ought to be too serious a matter for jest or derision. It is unnecessary to name the articles referred to ; they are familiar to every person interested in the military service.

Caste, the gulf which divides the commissioned from the uncommissioned of the regular army, is likewise un-American and opposed to our "manners and usages." But here we tread upon ground so thin that one scarcely dares venture with the weight of an opinion. It cannot be denied, however, that one of the functions of our small standing army, is to serve as an object lesson to our national guard and volunteers. It ought to be a model to them in every particular. But caste, fixed by regulations and iron-bound by custom does not, and in the nature of things, cannot exist with them. To suggest that it is unnecessary in the army, that the army is not a social affair but a national institution, that caste is simply an inheritance from the English, who adhere to it in their civil society as well, would undoubtedly raise an outcry of condemnation. It would be said that discipline

in the sense of subordination and obedience, could not be maintained without it.

It has been said of the British army, that "there exists no other army marked by such strongly pronounced caste; the distance which separates the private from the corporal is immense; that which separates the sergeant is greater still; and, finally, the officer appears to be of another class of beings, another nature than the sergeant." If we must needs adopt a part of the British scheme, it were better that we should adopt the whole, and let the distance between the private and the corporal be "immense." Napoleon speaking of the discipline which resulted from the British system, said, "The English discipline is a discipline of slaves. It is the patron over the serf. Such a state of things would degrade and humiliate the Frenchman, who requires a paternal discipline founded more upon honor and sentiment." Does it not degrade and humiliate the freeborn American? It ought not; for the private knows that he carries a commission in his pocket, and that by his own brains and hard effort, without favor or assistance, he can with one single leap, cross the wide gulf of caste and land upon the commissioned shore. But it undeniably does degrade the military service in the estimation of the average American; and, together with the average American's ignorance of the conditions of the service, it keeps many a young man from enlisting who would make an excellent soldier.

But the army is not ready for radical change in this matter. A change which strikes the very root of any system, hurts by its shock. There are in our ranks scores of splendid, cultivated young men; men who would be at ease in any parlor or in any company; men who are gentlemen by virtue of no act of congress. Can as much be said of everyone in the service whose shoulder wears a strap? There are hundreds of others, who, if they have not had the same advantages of education and culture as the class mentioned, have quite as much natural intelligence, self-respect, and love of the service,—men on a footing with the best class of young men in other walks of life, such as the telegraph operator, the bank clerk, the newspaper correspondent, the book-keeper, etc. Of such classes do we want our ranks and our warrant officers to be entirely composed, and every effort at improvement in discipline should have this end in view. Let us have the material, and the discipline will be easily added unto it.

Let us, however, take full pride in what we have, before we

lament what we have not. We have to-day the best army of its numbers on the face of the earth. Our men may not be as smart and well set up as the English ; they may not be as automatic in their drill as the Germans ; they may not be as servile in their subordination as the Russians, but let them be matched against 25,000 men of any other nation, in any test of campaign or battle, and who doubts what their work will be ? What officer of our service would have a thought of his men's abandoning him in a tight place ? of their turning back so long as he led ? of their refusing to go where he ordered them ? Whether it be mobs, or savages, or horse-thieves, or Mexican bandits ; whether it be in the heat of summer or in the rigors of winter ; whether it be over railway with full rations, or over trackless wilderness with alkali water or none at all, and the flesh of sore backed mules,—it is all the same to our men. They can be counted upon to do their duty.

Yet there is always room for improvement. Perfection is the asymptote of effort ; it may be approached into eternity but never reached.

To induce more of the best class of men to enlist two things are necessary. First we must overcome the prejudice against the ranks of the army, which our people have inherited from the English. This can only be done by overcoming in some way the general ignorance which prevails as to the condition of the enlisted men. The usual form this ignorance takes, is that the enlisted man, no matter what his rank or service, receives \$13 a month, in return for which he gives up every right of manhood and self-respect. The poor stoop shouldered counter-hoppers in our city shops, who hardly receive wages enough to pay for their cheap clothes and board, to say nothing of doctors bills, nurses, etc., and who serve at the mercy and caprice of their employers, honestly believe that they enjoy more rights and emoluments than our enlisted men ! So, also, do the able-bodied hired-men on our farms, who work from dawn to dusk the year round at a wage of \$10 a month ! What but ignorance could inspire such a notion ? A troop of cavalry has only to march through a farming region and give the gawking farm hands an opportunity to mingle with the enlisted men and talk to them, in order to secure recruits from the region. But it is not the ignorant farm hand or the stoop shouldered counter-hopper we want. The class of men we get make far better soldiers than the average farm hand would. They are more intelligent, more courageous, more venturesous, if

less docile and harmless. No class of men is more ignorant, more timid than the hired-men of our farms. Nothing but lack of knowledge, and the fear of the risk in trying the world on their own account, keeps them bound between the handles of a plow, gazing day after day upon the same narrow, uninteresting horizon. If many of our soldiers are men who have failed to win in some other of life's hazards, they have at least had the courage to make the venture. They have torn themselves loose from the plow and gone to the city to see what there was beyond the farm.

But another thing is necessary to induce the best class of men to seek our ranks as a calling. The service must hold out more advantages to the recruit. Very few men enlist to day with the premeditated purpose of spending their lives in the military service. No doubt most of them enlist to tide over some temporary embarrassment. In a year or two of service they find out the many pleasures and advantages of a soldier's life ; they get a taste for the service, then they reënlist. But we want men to seek the ranks for the advantages of it, and for the purpose of making their life in it.

To do this the position of the non-commissioned officer must be lifted to a higher level in dignity and consideration ; and the emoluments must be equal to those received by the best class of young men in civil pursuits. At the same time, the position must be attainable by any young man of first rate physique, and a fair education, who is willing to work hard for it. To ask for an increase of their pay that would enlarge the annual appropriation for the support of the army, is not to be thought of. But there is a way to increase their pay without increasing the amount of the appropriation. The appropriation bill for the year ending June 30, 1894, allowed \$475,130 for increase of pay to the enlisted men "by reason of length of service." Suppose there were no longevity pay, and this amount should be apportioned to the non-commissioned officers of the army. If to this sum we add \$41,700, the aggregate amounts paid yearly to corporals and sergeants of the staff corps, in excess of that paid to non-commissioned officers of like grades in the line, we have a total of \$516,830. One-twelfth of this amount is \$43,069.17, which divided by 4127, the total number of non-commissioned officers in the service, would give \$1043, the average amount to be added to the monthly pay of every non-commissioned officer. This estimate supposes, that staff corporals and sergeants receive the same pay as those of the

line. Saddler sergeants and hospital stewards are not considered, as it is believed that their pay is already sufficient.

There is scarcely a more responsible position in the army than that of 1st Sergeant. One of the maxims of the service is that a good 1st Sergeant makes a good company. His pay should be equal to that of any other non-commissioned officer. It should be at least \$45 a month, as should, also, that of the sergeant-major, the regimental quartermaster sergeant, the ordnance, the commissary, the post quartermaster and the signal sergeants. To increase their pay to this amount would take an aggregate sum of \$12,150 monthly, leaving a balance of \$30,919.17 to be apportioned among 1802 sergeants and 1623 corporals. This amount lacks \$84.83 of being enough to allow the pay of sergeants to be increased to \$28, and that of corporals to \$23 a month.

When we consider that these salaries are over and above all the necessary expenses of the non-commissioned officer, except his laundry bill, it should seem that he would be as well paid as the average man working for salary in civil life.

But there is much else that should, and can, be done to elevate the position of the non-commissioned officer. Everything should be done to make him feel the importance and the dignity of his office. The harder his chevrons are to get, within certain limits, the more he will value and honor them.

In a little book edited by Captain Charles King, a story is written by Acting Hospital Steward R. Moncton-Dene, in which "Private Jones of the Eighth," in declining promotion to corporal, is made to say some things to his captain, which strike so straight at the root of some of the evils of our present system, that it may be well to quote his remarks in full.

"In the first place, sir," said Private Jones, "the difference between the pay of a private and that of a non-commissioned officer is so small as to be beneath consideration. Secondly, as no examination is required to determine a soldier's fitness for promotion, that promotion cannot be regarded as a recognition of qualifications superior to those of the ordinary rank and file. It would seem rather to depend upon the mere recommendation of having done nothing to the 'prejudice of good order and military discipline' during the term of service as private, or upon the whim or caprice of the battery commander. Thirdly, the non-commissioned officer has no especial privileges. He messes and sleeps with the men, consequently his interests and associations

are in a great measure identical with theirs. Under these circumstances, it is not to be expected that much dignity or authority can attach to the office. Fourthly, it not infrequently happens that a raw recruit, with perhaps not more than three months service, is given some extra duty position in one of the staff departments, and is thereby enabled to draw more pay than the regimental sergeant-major, which seem to me such an extraordinary"—

Unfortunately "Private Jones'" captain here said: "That will do." Had this not happened, this whole essay might perhaps have been scissored from the recorded wisdom of the fictitious private. But the captain was not pleased with the private's views. He did not promote him.

Every evil mentioned by "Private Jones" ought to be corrected, and the sooner the better for the discipline of the service. The quartermaster's department has already taken the first step in the right direction by providing separate sleeping rooms for the non-commissioned officers in the new barracks. But separate apartments should also be set apart at every post for the non-commissioned officers' mess and club. The quartermaster's department should provide their furniture, tableware, etc., and the subsistence department their rations, or commutation thereof, and their cooks and attendants.

A non-commissioned officer's warrant should be signed by the Secretary of War, and he should not be liable to reduction to the ranks under any circumstances. Nothing is more hurtful to the discipline of a company than the presence in its ranks of a "broken" non-commissioned officer; and nothing weakens the authority of the non-commissioned officer over the private more than the fact that next month or next year their positions may be reversed. He should not be subject to trial by court-martial for any offense, whose penalty would be less than dismissal from the service. His term of enlistment should be for twelve months, and his pay should be increased one dollar a month for every re-enlistment. This would of course require some increase in the appropriation after the end of the first year; but the amount saved by the abolishment of the longevity pay of the private, and the expense due to desertions, which it is believed would practically cease, would more than counterbalance it.

An annual *Register of Non-Commissioned Officers*, should be published by the War Department, giving the complete military

history of every one, including the character given upon his several discharges, and serving as a guide to the business public in their search after good men for positions of trust in civil pursuits. Great liberality should be shown by the War Department in granting discharge to non-commissioned officers who desire to accept civil positions.

The three-year enlistment law recently passed is good as far as it goes; but it ought to provide that no man should be enlisted a second time as a private in the line. The whole army joined in the cry against the so-called "ten-year law," but the cry was raised upon sentiment rather than upon conviction. The real mistake of the Proctor law was that it did not make the limit of service as a simple private without hope and without ambition three, instead of ten years. Three years in the ranks makes a man a soldier, and it develops him in body and character, and makes him every way a better man for any pursuit he may engage in. It makes him a better citizen and fits him to take up arms whenever his country may need him for its defense; but ten years of a private soldier's life utterly unsuits him for any other occupation. If he is turned out, he must beg or starve. Is there any wonder that every officer and man in the service should have signed his name to the petition for the repeal of the "ten-year law"?

The three years of service as a private should be a term of instruction and probation. Thirteen dollars a month is pay enough, without any increase for length of service. Three dollars of this ought to be retained and the sum handed him upon his discharge. The remaining ten dollars would be enough to purchase the luxuries and extras of his life of probation; the Government would provide him the necessaries.

At the end of his enlistment every man should be given the privilege of an examination to determine his fitness for promotion to corporal. The examination should not only inquire into his knowledge of military duties, but also into his general education and his character. Of course the standard of general education should not be too high; no higher than is expected of a young man in business. But his character and his knowledge of the trade of a soldier should be of the highest grade. And no man should be eligible to promotion who could not pass the examination, and who had not served three full years as a private. In case a vacancy occur at any time among the non-commissioned

officers of a company, the captain should select a worthy private (as far as practicable, the one who would first complete his three years) and make him a lance-corporal. If at the end of his three years he could pass the examination, he would be re-enlisted as a corporal.

The fourth article of "Private Jones'" complaint touches a wide-spread, never-ending and far-reaching cause of discontent, and therefore of indiscipline, in our service to-day. "Private Jones" has enunciated the enlisted man's view of it; and the officer's view has been declared so often, in print, with the pen, and by the living voice, that a reference to it craves pardon. What company commander has not had reason to complain that he could not discipline, train, instruct and drill the men of his company as he would like to, because of the absence from the rank of men on "extra" or "special" duty, as mechanics, teamsters, clerks or laborers in the staff departments? Every other duty at a military post has to be arranged with reference to these men. If they appear on the target range, the firing stand must be given up at once to them, in order that they may fire their required number of shots, usually without any serious effort to hit the target, and get back to their staff work. Some of them are always excused from drill.

But the work of keeping up the post must go on. The bakery must bake; the engine must pump water; the carpenter must repair; the records of the adjutant's office must be kept; the hauling must be done; the commissary store must be swept and kept in order, and must receive its supplies and issue the rations, and so on through the whole routine. The remedy for the trouble has been pointed out time and again, but alas, it requires an Act of Congress. But until Congress does act, and gives us a Quartermaster's Corps containing carpenters, saddlers, blacksmiths, wheelwrights, teamsters, engineers, etc., and a Subsistence Corps containing cooks, bakers, laborers, etc., all excused from drill and duty not connected with their department, we shall not escape the evil we are now burdened with; nor shall we attain that unity of training and discipline we so much wish for in our companies.

Such corps containing as many men as are now employed on extra duty in these departments at the various posts, and no more, could be organized with little additional expense to the Government. The "extra duty" pay of mechanics and artisans

is fixed by law at 50 cents a day, and that of clerks, teamsters, laborers and others at 35 cents a day. Add these amounts to the pay of the "recruit of three months" detailed on such duty, and we have \$28, and \$23.50 respectively, as his month's pay. If the extra duty man happens to be in his second enlistment his pay will be \$33 if a mechanic or artisan, and \$28.50 if a teamster, etc. Can it be doubted that the Government could enlist an excellent class of special men for a quartermaster's and subsistence corps, for the same monthly pay?

If such corps existed, in connection with the three-year term, and no more, as a private in the line, many privates of excellent character who, from lack of education, could not pass the examination required to promote them to commissioned or non-commissioned officer, would reënlist in these special corps as privates. Likewise the Hospital, Ordnance, and Engineer Corps could be recruited from men who had served three years of probation in the line, and who were specially qualified for the duties of these corps. The pay of privates in these latter corps is under existing laws sufficient. The term of enlistment should be one year in all the staff corps, and one dollar a month should be added for every reënlistment.

The law for the retirement of enlisted men at the end of thirty years of service is better than no provision at all for faithful old soldiers; but the requisite period of service should be shorter, of course. Few men last through thirty years of the exposure and hardships to which our cavalry and infantry soldiers are subjected in their frontier service. Justice, too, would seem to demand that a retired pay assimilated to that of officers, should be provided for enlisted men disabled in line of duty; and the monthly deduction from the pay of enlisted men for the support of the Soldiers' Home, which especially during the existence of the "ten-year law" has been a cause of discontent, should cease.

When the office of our non-commissioned officers shall have been raised in dignity, in pay, and in all other respects to the status its importance deserves, then it will be time for non-commissioned officers to sit on courts-martial for the trial of enlisted men, according to the spirit of our government and the "direction of our laws."

The position of the non-commissioned officer needs to be elevated, not only to induce the better class of men to enlist, but also on account of the greater importance of the office in time of

war, due to the changed condition of battle. In the old-time, elbow-to-elbow, double-rank formations the captain could personally command his whole company ; but under future conditions of "extended order" the corporal's squad will occupy as much front as the whole company used to occupy. And the squad must be led into battle by the corporal. He will select the object for them to aim at, and command their fire.

Moreover, the American army is so small, and our provisions for immediate defense are so out of proportion to our population and the greatness of our country, that every non-commissioned officer in the army ought to be in every respect fit for a commission in the volunteer or regular service, in case of the outbreak of war. The usual acceptation of the word, discipline, in our service suggests a reference only to the rank and file. When we speak of the higher persons of the body military, we rarely make use of the term. One of the saws descended to us from that vague tradition, the "Old Army," is that "Regulations are for 2d lieutenants and enlisted men." But there is no question but the higher the rank the higher the discipline ought to be. A private refuses to obey an order given by his officer ; he is sent to the guard-house, tried by court-martial, sentenced to six months' confinement and stoppage of pay ; and that is the end of it. But let a post commander engage in a paper war with his department commander, or a department commander with the commanding general, and the effect reaches out through the military service until it penetrates every post and every barrack, and leaves its evil influence upon the discipline of officers and men alike.

One of the most general forms of indiscipline among officers is the habit of criticising the acts and orders of superior authorities. This is especially baneful in officers of rank and length of service, on account of its bad influence upon younger officers. It encourages the latter to become growlers, instead of cheerful workers ; to chafe under restraints of discipline, rather than to take pride in yielding to superior authority ; to dislike the military service, rather than to love it ; to stop to criticise and pick flaws in orders, rather than to obey instantly and without hesitation.

Example is the best of all teachers. The officer that criticises his superiors to his inferiors and plainly shows that he obeys the orders he receives only by compulsion, complying with the letter

and not the spirit, must not expect a cheerful obedience or a real respect from his inferiors. And yet, strange inconsistency! we often see the officer who is the most critical of superior authority and the most unwilling in compliance, the least tolerant of insubordination or a lack of the outward marks of respect, on the part of his inferiors.

Livy says of Hannibal, that "none ever showed a happier aptitude of disposition, whether in obeying or commanding; so that it was impossible to say whether he was most prized by the general or by the army." (Tytler.) We have many officers in our service of whom this remark is as true as it was of Hannibal. It is a pleasure to serve under them, and their example in a post has a finer effect upon the younger men,—those learning the soldier's trade,—than all the Regulations and the Articles of War with courts martial behind them.

The popular opinion of the army officer is that he is a lazy, vicious man, usually a snob. This opinion is an English inheritance, also, but it surely does the military service great wrong to-day. Army officers are, in truth, about like gentlemen of the other professions in the country. There is a considerable amount of culture among them, and their routine duty, not to mention their occasional hard service in the field, is quite as arduous as that of the college professor, the clergyman, the lawyer, the skilled surgeon, and gentlemen of other educated professions. Their standard of honor is surely as high as that of any class of men on earth, and what the world calls vice is not more prevalent among them than among any other class of American gentlemen.

Gambling, practised to a limited extent in the army to-day, is undoubtedly the meanest vice soldiers can be guilty of, because it is the least conducive to comradeship. Club men in civil life are generally men of means, and members of Congress are not usually dependent upon their salaries for the livelihood of their families. These gentlemen therefore, can afford to gamble for mere sport, without carrying away from the table with their gains the consciousness of depriving their unlucky friends of the means of support. Not so, however, the soldier in the army of the United States, who wins from his comrade. Most officers and men are dependent upon their pay, and many of them have families to support out of it. With due care it will meet their expenses. Every soldier knows what the pay of every other is;

and he knows that he cannot win a part of his friend's pay, without compelling him and his family, if he has one, to deny themselves some things that they have actual need of.

Of the few cases of the embezzlement of public funds which have occurred in the army, nearly all could be directly traced to the poker table. The same baleful cause has within the past decade blotted from the *Register* the name of more than one young officer, who might have lived a life of honor and usefulness to the nation. More desertions from the ranks can perhaps be attributed indirectly to gambling than to any other one cause. But this vice in the army could be utterly eradicated by an Article of War forbidding it. Under our present law and regulations gambling is no crime.

One chief cause of discontent and half-uttered complaint among officers of the line, is the manner in which details for special, detached service are made by the War Department. They find little encouragement to apply themselves strictly and energetically to their legitimate duties, beyond the reward of their own conscience. They see too many officers detailed upon special duties for which they have no special aptitude. They know too well that such details are made by reason of some extraneous influence. But they do not, in their ignorance, give the War Department credit for its own helplessness.

The War Department, more particularly the Commanding General, stands as a buffer between the law makers and the army. His is no easy place. If a half dozen Senators come into his office and request that some young officer be given a place at the department for which he has no special fitness, better, by far, that he should grant their request than send them away with ill will against the army. What though the young man has not served long enough with his company to learn how to command his platoon? his services can easily be spared by his captain, and he cannot do any great harm on detached service. When the War Department is left to its own free choice, it may be counted upon to select the best man for the place.

Another and more just grievance is the manner in which selections are made for promotion to staff corps. But this matter rests entirely with Congress, and so long as this power does not reach forth its restraining hand, Presidents will continue to promote officers to the Quartermaster's and the Commissary Departments who have no earthly qualification for the places except a

father or a father-in-law. This condition cannot but repress the ambition of worthy and capable officers of the line, who have special talents and training for staff positions. When an officer is promoted to the staff, no one asks "What were his qualifications?" but "What was his influence?" And every officer desirous of promotion to the staff, knows that he must cultivate "political influence," rather than personal fitness. But Congress will undoubtedly enact a remedy for this evil before many years shall have passed. Some form of examination, like that required for promotion to the Ordnance and the Signal Corps, will be provided for soon or late. Until such time, the other staff corps cannot hope to get the best talent from the line.

The fashion, which seems to have grown up in the last few years, of publishing long, commendatory orders upon the termination of an officer's tour of staff duty, has a debilitating influence upon discipline. It ought to cease. It imposes unnecessary labor upon the colonels and the general officers, or upon their amanuenses, and carries no gratification to the heart of the subject. The old way of saying nothing, unless there was something real to say, was better. The ever recurring platitudes we are invited to read in the orders published in our service journals, upon the relief of regimental adjutants and quartermasters, have ceased to amuse. And yet, to such an extent has this custom grown, that nowadays, unless an officer is publicly thanked and commended in orders for having simply done his duty while filling the position of adjutant or post signal officer, he must regard the omission as a reflection, as a declaration that he has not done his duty faithfully.

Akin to this fashion, its offspring, perhaps, is that of presenting swords and gold-headed canes to captains and lieutenants, which is gaining ground among the rank and file. This is indirectly forbidden by the *regulations*, as it is a "mark of approbation," but it is tolerated. So much so, that if an officer leaves his company without such testimony from his men, the inference is that he was disliked by them. Of course, there is the temptation before an officer to pay more attention to winning the affection of his men, than to performing his strict duty and maintaining discipline. So let this practice be strictly forbidden by the *Army Regulations*. It is an imposition upon the men and a temptation to the officer. It may be well enough for volunteer and amateur troops, but it has no place among professional soldiers. Praise

and reward are powerful incentives, but they must come from the right source, and they must have a real foundation, to be of benefit.

Under our system the post commander is the guardian of discipline among commissioned officers, the captain among enlisted men. As early as 1821 the *Army Regulations* recognized the importance of the example, the authority, the advice, the moral vigor of the commanding officer, in the maintenance of discipline and harmony among his officers and men, and of that "brotherhood, unanimity and *esprit de corps*" which should always exist among soldiers. And the *Regulations* of 1834 say that "he is the source from which proceed the life and energy of the corps entrusted to his charge; each individual looks up to him for example, instruction, and encouragement; and a proper fulfillment of his responsible duties must always result in honor to himself and advantage to the service."

If the post commander is active and interested in military study, and in all duties and exercises of a military nature, his officers are sure to coöperate cheerfully with him. They delight in seeing him on the target range, on the drill ground, and wherever military work is going on. It is his place to see that young officers shall start upon their career in the right path. In the old days of post-trader stores, many a young officer might have been saved from ruin, had the post commander done his duty by him. When a young officer joins his regiment for the first time, he ought to be put to work and kept busy. If the post commander will order him to map the post or reservation; to survey a road; to draw plans for some imaginary buildings; to build a bridge over the stream near by; to do anything, no matter what, the "youngster" will put his heart and soul into the work.

He will learn something by it, and he will get started in the way of work, rather than in the way of idleness. Above all let the post commander encourage him to read and study his profession; not forgetting, however, that too much reading leads to inactivity and laziness. The most useless men we have in the army are those who spend so much time reading, that they have none left for either acting or thinking. We have a good many such.

The young officer ought also to be sent out with small detachments of men, to march across country and cultivate an eye for topography, a taste for field duty, and a dependence upon his own resources. Hunting leaves ought to be granted liberally, and

officers encouraged to take them. Our best soldiers have all been hunters.

The last few years have brought great improvement in military culture among our officers, due to the introduction of the Lyceum and its scheme of study and essays. But here again the post commander is the inspiration. He decides, by the interest he takes in it, whether the Lyceum shall be a success or a failure. He cannot delegate his influence to any one else.

In the *Army Regulations* of 1818, issued by General Scott, we find this paragraph: "Courtesy among military men is indispensable to subordination and discipline. The good or brave officer or soldier is always respectful toward superiors. He feels that in honoring them, he does honor to the service and himself. His respect will not then be confined simply to martial obedience, but will extend to all occasions and all circumstances. Thus, it is always the duty of the inferior to accost, or to offer first, the customary salutation, and of the superior to return such complimentary notice." And again: "The salutation among officers in uniform will be made by touching the cap or chapeau, without inclination of the head or body; out of uniform by uncovering the head. In this case the inferior would be the last to recover the head." If we trace the subject of military courtesy on through the various editions of the *Army Regulations*, we find it beset with vicissitudes. In some editions it is recognized as a mutual obligation as binding upon the superior as upon the inferior. In others it is ignored altogether. In the *Regulations* of 1881 we find its last recognition in these words: "Courtesy among military men is indispensable to discipline"; but it seems to mean only a courtesy from inferior to superior, for the paragraph continues: "Respect to superiors will not be confined to obedience on duty, but will be extended on all occasions." The superior is not bound to show the inferior any kind of respect or any mark of courtesy!

Even this paragraph is left out of the *Regulations* of 1889. They enjoin no courtesy among military men, and no outward expression of it. In his *Customs of the Service*, General Kautz dismisses the whole question, by remarking simply that "the officer should be brave, intelligent and courteous." As far, therefore, as regulations and the recognized authority upon the customs of the service are concerned, there is no obligation of courtesy among the persons of the United States Army. So long as inferiors obey strictly and execute promptly the lawful orders of their

superiors ; so long as military authority is exercised with firmness, kindness and justice, and punishments conform to law ; so long as superiors injure not those under them by tyrannical or capricious conduct, or by abusive language (A. R. Article I.), nothing more is required. The 2d lieutenant may salute his colonel or not as he sees fit ; and the colonel may return his salute or not as he elects. And this almost represents the practical condition of courtesy among our officers to-day. There is no positive, soldierly form of salutation among them. They wave their hands at each other, cry "How!" or bob their heads as the spirit of the moment inclines them ; and those who have had the advantages of early training usually lift their hats to their seniors in age. How much more soldierly the salute prescribed by the *Regulations of 1818*.

Meanwhile, no such desuetude has been allowed to fall upon the salute of the enlisted man to the commissioned officer, whether 2d lieutenant or general. Of the importance of this, we have adopted, and clung tenaciously to, the English notion. In their old books upon discipline and training, the enlisted man's salute was the first article. It is the foundation of all their system. No other military system has laid such stress upon it ; no other military system has gone to such pains to distinguish between the commissioned and the uncommissioned,—no other, except that of the United States.

The true principle of the salute, is that it should be an act of recognition between soldiers ; and the junior should, of course, give the first expression of it. And there should always be some such recognition between soldiers, no matter what the difference of their stations may be, what they may be doing, or where they may be. If one is so engaged that it is not practicable for him to make the salutation, the other should make it nevertheless. Only the half of this principle is in practice to-day. If an enlisted man meets an officer he salutes him, no matter whether the latter can acknowledge the salute or no. But if an officer meets an enlisted man, whether a recruit or an old ordnance sergeant who helped save the Union from destruction thirty odd years ago, whose hands are so occupied that he cannot make the drill-book salute, the officer passes him with no more recognition than he would vouchsafe if the man wore a convict's stripes, instead of the uniform he is expected to be proud of. This is all wrong.

The captain enters the orderly room ; the 1st Sergeant rises,

lays off his cap if he has it on ; the captain sits down in the chair the sergeant vacated, tips back his cap and signs the papers laid before him. A dead silence reigns. There is not even a glance of recognition from the captain to the sergeant. Frederick the Great used to greet his men by word of mouth, and it cannot be thought that discipline would suffer in our service by a simple observance of the civility which good manners enjoin upon men in all walks of life.

In order that the military salute may be a mark of courtesy it should be required in all grades of the service alike. Every officer should give his senior the military salute, and the senior should return the same. And the office of the non-commissioned officer would be raised in dignity if he also were saluted by his inferiors. It is a well-established principle that "an order when it is legal is binding upon the person to whom it is given, whether made by a corporal or a general." ("Customs of the Service."—Kautz.) And the respect which a person in the military service shows his superior, should be the same whether the superior be a corporal or a general. And likewise the courtesy which a soldier shows his inferior should be the same, whether the inferior be a colonel or a private.

If this notion of military courtesy prevailed in our service, the enlisted man would not feel it a humiliation to rise from the midst of civilian acquaintances to salute a passing officer. The salute would not be a mark upon his grade only, but an expression of courtesy for all grades. He would salute his non-commissioned officers with the same pride a West Point Cadet takes in saluting an officer ; for he would only be paying respect to the office he hoped soon to occupy himself.

The cultivation of sentiment and respect for the flag is not what it should be in our army. The flag itself is only a symbol, of course, but it stands for all the soldier should serve and defend with his life,—the honor and glory of the nation. It is the worship of symbols that binds men with the strongest ties. Without symbols and respect for them church and state would fall. The Speaker of the House of Representatives may cry "order" with all his voice without effect upon his turbulent members, but when the Sergeant at Arms starts down the aisle with the solemn mace of his office, order is resumed ; and Joshua himself could not more effectually stop the passage of the sun than Captain Bassett does by turning back the hands of the Senate clock.

Officers and men are expected to salute the flag on all occasions, but they often neglect the attention. The writer was at one of our military posts some months ago with an officer of the English army. They were walking across the parade ground, when the Englishman lifted his hat. So did the American, supposing his companion was bowing to some one. A half-hour later the two passed along the same way, and at the same point the foreigner again uncovered. This time the writer looked to see whom they were saluting. No person was in sight, but a hundred yards away the Stars and Stripes were waving in all their beauty and grandeur at the top of their staff. Would that this foreigner might go to all our posts and teach our soldiers patriotic sentiment!

The sailor that broke up the wedding party not long ago, which was passing from the church door to their carriages upon a United States flag stretched over the pavement, deserved to have his image wrought in gold, and to be thanked by Congress. What he got, was a trial before a police court for disorderly conduct; but the judge had patriotism and sentiment enough to discharge him.

How many officers and men of our service know what national anniversary falls upon the 14th of June? Yet, this day ought to be celebrated at every one of our posts with the firing of salutes, the presentation of the colors and whatever other ceremony would add honor and glory to the day.

No paper on the discipline of our service can let the Post Exchange go unnoticed. It and its influence upon discipline have been so much discussed and reported upon however, that little is left to say. The general verdict seems to be that it is, along with its "wines and light beer," an aid to discipline. It is surely an improvement upon the post-trader and his grog-shop. And yet, it must be said that trafficking in liquor, even "wines and light beer," is debasing to officers and enlisted men. Few officers can go before a notary public and make the affidavit for license to retail liquor, without feeling a qualm of reproach from within, and without glancing furtively behind them with the hope that no friend is looking on. But they take to themselves the soldier's comfort, "I am ordered."

But the bar and recreation rooms of the Exchange are the enlisted men's club, and they should be kept closed during the working hours of the day. So should the club of the officers,

when they are fortunate enough to have one. The clubs of gentlemen in civil life are usually kept open during all hours of the day; but there are always some of the members who have nothing particular to do but to amuse themselves. There should be no such men in the army. Every officer and enlisted man ought to have his day's work to do.

It is believed by many that the bar of the Exchange leads young men to drink, who otherwise would abstain. The profits of the Exchange are applied to the improvement of the soldier's fare, and to other purposes for his benefit and comfort. Articles other than beer are sold as nearly as practicable at cost. It is held, therefore, that old soldiers require, or induce recruits to patronize the bar, in order to contribute their part to the profit. If such is the case, it would be a protection to the recruit if he should be forbidden by orders to patronize the bar for a certain time; until he had established his character in the company, until he had found his place, as it were, and had made up his mind as to what he should and what he should not do. A young man coming into new surroundings has to feel his way at first; he cannot assert his character until he knows precisely where he is. A list might be posted in the bar room of the Exchange, upon which the name of every recruit arriving at the post should be entered, with the date of his enlistment opposite it. For one year from this date he should be forbidden the privilege of the bar. At the end of that time a line should be drawn through his name, to indicate that the restriction was removed.

Nothing is more hurtful to discipline than idleness. The soldier's time should be occupied; but it should be apportioned to work, recreation and rest. He should have enough work to make him appreciate his recreation, and recreation and work enough to make him enjoy his rest. But idle loafing should be discouraged by every means. His work should, however, be of a soldierly kind. There is no more certain damper to a martial spirit than the pick and shovel. There has heretofore been entirely too much fatigue work for the enlisted men to do; but it is hoped that the building of permanent posts, and the concentration into large garrisons, will soon do away with much of it, and leave soldiers more time to devote to professional work.

An encouraging sign of progress in the military service is the tendency toward the division of the day at military posts, into hours of work and hours of recreation. Under the old system, a

soldier's life was chiefly one of watching and waiting. His day's work was never done; his time was never his own. When he was not actually employed, he was idly sitting, listening for the next signal for some roll call. He scarcely dared put his mind and attention upon any subject, lest he should fail to hear the bugle. The first earnest of the new system was the abolition of tattoo roll call. When we succeed in having eight consecutive hours of the twenty-four set apart for work in garrison for both officers and men, and the rest for recreation and rest, a long stride will have been taken in the direction of discipline. But what will become of dress parade? It must take place at sunset. Dress parade must follow in the track of tattoo. So must our formal guard-mounting. They have outlived their usefulness. They belong to the time of muzzle-loaders, leather stocks, and other antiquities.

Everything should be done to give interest to the enlisted man's life. All manly sports, especially all which develop him mentally or bodily should be encouraged. Every garrison should have a gymnasium; every cavalry garrison a riding hall. Mounted soldiers should be given every reasonable liberty with their horses. Few would abuse it.

There should, above all things, be a good library of books and magazines at every post for the use of officers and men. Since the extinction of the "post fund," there have been few books added to the post libraries. So long as this is the case, companies should be encouraged to organize library associations within themselves. There are many company libraries in the service, and they are a great source of pleasure and improvement to the men.

The barracks should be made as comfortable and attractive as practicable to the men. Every company barrack should contain its amusement room, where the company can have its billiard table, chess and backgammon boards, etc.; and a reading room with shelves for books, and tables for papers and magazines, and with alcoves provided with writing tables, where the private can go to write his letters.

And then, after all, indiscipline among officers, non-commissioned officers, or men, should simply not be tolerated. Drunkenness, idleness, insubordination and tyranny should be utterly stamped out. It should not be forgotten for an instant that the army is a public servant, and that the people have a right to de-

mand the best conduct from it, and the best condition at all times for their protection. If it has been at times used by politicians as an asylum for worthless dependents, this is not the purpose of its being. It is too easy already to get the best class of young men in the country to accept commissions in the army, to allow unworthy officers to remain in it. It is hoped the same remark may apply to the position of the non-commissioned officer, after it shall have received the recognition its importance deserves. And when this office succeeds in attracting the better classes of young men, there will be no further difficulty in securing the best men for privates.

If by chance, and in spite of the best efforts and care of the recruiting officer, unworthy men get into the ranks, men who cannot be brought under the restraints of discipline and subordination, let the ranks be rid of them as soon as practicable. But let them have a fair trial. The army is no reformatory, but it must not expect a recruit to yield to the reins of discipline like an old soldier. Time and pains are necessary to teach him. He is like a young horse just off the range, but he should be trained not broken. If, however, gentle, firm handling will not make him bridle-wise, let him be condemned and got rid of.

And let no minors be admitted. Boys are of no use in the ranks. There are a good many eighteen and nineteen year old youths encumbering the army to-day whose parents have put them there simply to get them away from the family board.

It is to be hoped that the law just passed prescribing the qualifications of recruits, and requiring a certain amount of education in them, will have the effect of doing away with the schools for enlisted men at military posts. No venture in the service has met with less success than the attempt to make a kindergarten of the army. Post commanders have conscientiously tried to carry out the orders of the War Department establishing them, but post schools are, nevertheless, a failure.

It is a curious fact, but one full of wholesome encouragement, that modern experience proves that the state of discipline in armies is bad in proportion to the severity, and especially the degradation of the penalties inflicted for breaches of conduct. Such punishments as flogging, the wooden horse, hanging by the thumbs, branding, and shaving the head, were in vogue in the British army in the time of the Peninsular Campaign ; and yet, it was of the soldiers of this campaign that the Duke of Wellington

wrote : " It is impossible to describe to you the irregularities and outrages committed by the troops; * * * there is not an outrage of any description which has not been committed on a people who have received us as friends." (Farrer.)

The history of our own little army bears witness to the same fact. Who but believes that the discipline of the ranks to-day is of far higher quality than it was in the days when flogging, standing upon a barrel, bucking and gagging, rolling in a barrel, " spread-eagling," tarring and feathering, and other like cruel and degrading punishments were common ?

Justice is the backbone of discipline ; not harshness, and not mercy. Mercy cannot be shown to offenders without trampling upon the rights of good men. When the President shows mercy to an officer whom a court-martial has adjudged unfit for the service, he does an injustice to every other person in the army and to the people. When a captain softens his heart toward a drunkard, even though he may be an old soldier who has shared the company's dangers and helped win its glory, the captain does wrong and injustice to the good men placed under his authority. They must do the drunkard's guard and other work, guard him when a prisoner, tolerate him as a comrade, and bear his shame.

In conclusion, we want in the American army American discipline ; a discipline which thinks but does not stop to argue ; which is respectful to superiors, but courteous to inferiors ; which knows how to obey before it learns to command ; which is just but not merciful ; and which is so careful of its own good name that man can have no higher certificate of character than the soldier's parchment of discharge which bears the word " Excellent."

AN ANTIQUATED ARTILLERY ORGANIZATION.*

BY CAPTAIN ARTHUR L. WAGNER, 6TH U. S. INFANTRY.

GOLD MEDALIST.

NO arm of the service gains battles by its own unaided efforts; it is only by the skillful combination of the three arms that victories are won or disastrous defeats averted. Whether the rôle of cavalry on the battle-field be great or insignificant, it is certain that no battle can be intelligently begun without a preliminary reconnaissance by that arm, and that no victory can be decisive if cavalry be not available for the pursuit. The combination of the artillery and infantry is still more imperative, and even more intimate, than that of either with the cavalry. A successful attack demands that the way for the assaulting infantry be prepared by the artillery, which should silence the opposing guns and shatter and demoralize the infantry of the defender; while, on the defensive, artillery must be depended upon to neutralize the effect of the assailant's guns, and to crush, or at least cripple, the attacking infantry before it can reach the defender's position. In either case, the fire of the artillery must be prompt, effective, and continued from the first opening of the battle to its very end. It follows, then, that the best organization of the field artillery is that which will lend itself most readily to the early, continuous, and powerful use of its guns; and it is a matter of interest and importance to ascertain what that organization is, for the organization approved in peace will doubtless be the one adopted on the outbreak of war.

There is no question as to the proportion of the artillery to the other arms. The guns with an army should be as many as can be promptly brought upon the field of battle and effectively used there; and experience has shown that this number is obtained by giving the artillery a proportion of from three to four guns to every thousand men of the other arms. Having a proper proportion of artillery, the question is, How shall it be organized so as to obtain from it the best results? It is prescribed in one of our official publications† that in the armies of the United

* Read before the Fort Leavenworth Branch of the Military Service Institution.

† "Troops in Campaign," par. 23.

States, from one-fourth to one-third of the field batteries shall be united into an artillery reserve, such reserve being, of course, independent of all army corps, and under the control of the commanding general alone, or the chief of artillery acting under his orders. The remaining three fourths or two-thirds of the batteries are assigned to the different corps and divisions as corps and divisional artillery. On the other hand, we find that the artillery reserve has disappeared from the armies of all the great military nations of Europe, and that its employment is reprobated by distinguished European officers, who base their objections to such an organization, not merely on theory, but upon their own extended experience and observation in war. The question naturally arises, Are we right, and the ablest European authorities wrong? Are we right in assuming that American conditions demand an artillery organization that has been found useless in European wars; or are we simply behind the times in retaining an organization that has been relegated to the past by the introduction of more powerful field guns than those in use when the artillery reserve was a potent factor in the decision of battles?

Let us first consider some of the most weighty European ideas on this subject, and then endeavor to see how far they are applicable to our own conditions. Von Schell says: "Formerly in some armies a bond of union existed between the Army Corps in the shape of an army artillery reserve. In Germany we have no such body, nor do we consider that the general commanding has any need of it. It would hamper him without any corresponding advantage, and throw difficulties in the due exercising of his command. The commander-in-chief of an army should never have to think of the special employment of any individual body of troops, as he has much more important things to look to, and all his attention is claimed in other directions. He commands the army as a whole, and has to deal with Cavalry Divisions and Army Corps, and the bond which unites and hinges together for the battle the different portions of his army is invisible. Added to this, Army Corps are much too large fighting bodies to be joined easily and pliably by an army artillery, which would merely become a reserve, and as such would always be deployed too late."*

Von der Goltz is of the same opinion, as is shown by the following quotation from "The Nation in Arms": "In earlier times

* "The Tactics of Field Artillery," translated by Turner, p. 109.

it was universally believed that the army needed, in addition, an artillery reserve. In great decisive battles this reserve played about the same rôle for the field-marshal as the corps artillery in our day does for the general in command of an army corps. Besides, its employment was limited to one or two days in a whole campaign, and the trouble of dragging such a cumbersome mass of guns behind the army was not found to be worth the labor. Besides, the commander-in-chief can, during the battle, form a large line of artillery, at will, of the corps artillery of several corps. If they have been planted behind the front, to support a final charge, the employment of their corps artillery, as a reserve of guns, is the sole means of making use of the abundant and still available supply of artillery."*

Hohenlohe's opinions on the subject are essentially the same. "I beg you to observe," says he, "that these great artillery reserves were not intended to be used until the time when the moment for decisive action was believed to have arrived, that is to say, at the time when the decisive point had been selected, and it was desired either to deliver or to ward off an attack on it; and that they ought logically to be kept back out of action until a decision had been arrived at as to which was the decisive point. Napoleon I., our great teacher in tactics and strategy, never did otherwise, and kept his great artillery masses always in hand, using them as trumps, when he proposed to strike the decisive blow. What was the reason for this mode of proceeding? Because he would not allow his artillery to get out of hand until from the development of the course of the fight he had decided where he must use it.

"But with the introduction of rifled guns this reason for holding back the great masses of artillery lost its force. The artillery of the Napoleonic wars, which was of but little use at a range exceeding 1000 paces, and which, in order to produce a decisive effect, was obliged to approach to within 300 or 400 paces of the enemy (for example, Senarmont at Friedland), was undoubtedly let out of hand when once it had been sent into action, and it was then impossible to count with any certainty upon the power of employing it anywhere else during the same battle. But an artillery which can produce good effect at a range of from 2000 to 4000 yards, and which in the ordinary course of the artillery fight need not act at a shorter range, is not let go, but held fast in the

* "The Nation in Arms," translated by Ashworth, p. 341.

hand of the leader of artillery, even when it has opened fire. He is still in a position to move this artillery to another point, and the artillery is in a condition to carry out his order so long as the fight has not yet assumed a decisive character.

"Therefore the general takes his artillery into use, even though he intends to prepare the decision with it, and no longer holds it back inactive in reserve until the arrival of the decisive moment.

"The extraordinary increase of range afforded to the artillery by the introduction of rifled guns has another effect, namely, that it will be more rarely necessary to change the position of batteries when it is desired to fire on the decisive point, and that it will, as a rule, be sufficient to change the direction of their fire. Remember that the fighting front of an army corps extends for the great distance of four miles (English). A gun which can make good practice at 4000 yards has the power, if it be posted in the centre of the line, of firing on any point along the whole front, granted always that the ground in front is exceptionally open and free from cover for the enemy. But a gun which was of little use over 1000 paces, and which in order to produce a decisive effect was obliged to go in to the short range of 500 paces, can command only 1000 paces of the front of battle, that is to say, about one-seventh. It was impossible to reckon on the assistance of such a gun in preparing the decision, when this was to take place at a greater distance than 1000 paces from it.

"So long as we were armed with smooth-bore guns it was, therefore, an absolute necessity to hold back a considerable mass of artillery in reserve. This necessity diminishes with every increase of the range of guns, and at the present range of rifled guns ceases to exist."^{*}

Again, he says: "We may add that the greater the power of the artillery, the less is the necessity for it to move in order to be available for use in some fresh direction. Even the guns which we used in the war of 1870 were sufficiently powerful to be able, when standing in the centre of the front of an army corps, to give aid to any part of the action of that corps, by merely turning their fire upon the spot in question without themselves changing their position. * * * Since the sphere of effect is now still more extended, artillery will be able, without moving, to aid on a yet wider front. An army corps must therefore always en-

^{*} "Letters on Artillery," translated by Walford, p. 129 *et seq.*

deavor, wherever possible, to bring the whole of its artillery into action. If artillery, for which there is room in the position, is held back in reserve, the officer doing so will act in a manner similar to those strategists of former days who, as at Halle in 1806, placed their strategical reserves outside of the theatre of war; but at last Napoleon taught them that it is impossible to be too strong on the field of battle.

"This will not altogether hold good in the case of an entire army. No field gun has at present sufficiently long range to be able, from one and the same position, to command the battle front of a whole army. It might therefore in this case appear desirable to have a reserve of artillery available, in case it might be necessary to employ exceptional strength on one or other flank of the army. But an army composed of many corps will still hold in reserve a certain number of entire army corps, and will thus find a sufficient reserve of artillery in the batteries of these corps. Thus in the battle of the 18th of August, 1870, the 3d Corps, which was otherwise not engaged on that day, sent forward its corps artillery into the position at Vionville." *

Bronsart von Schellendorf disposes briefly of the artillery reserve as follows: "The body thus formed, proved itself one difficult to find quarters for, and unwieldy both on the line of march and in battle. It was never possible to employ it as a whole, so as to obtain an effect commensurate with the number of batteries of which it consisted, and this, indeed, quite agrees with the experiences of Army Artillery Reserves gained elsewhere. It was soon evident that in spite of the most careful arrangements, the great disproportion which exists between the depth of artillery in column of route, and the front which it requires in line of battle would, in the case of such a large mass, occasion serious inconvenience. As then, both theory and practice are equally opposed to the formation of large bodies of artillery as constituent parts of an army, we are justified in assuming that as in the campaign of 1870-71, so in the future, no Army Artillery Reserve will again appear in the *Ordre de Bataille*." †

Now if the views of these authorities are to be discarded by us, it must be for some good reason. It will not do to pervert

* *Ibid.*, p. 342.

† "The Duties of the General Staff," translated by Hare, Vol. II., p. 11. Similar views could be quoted from other distinguished artillerists, German, French, and English; but the above quotations are deemed sufficient.

patriotism into bigotry, and reject them merely because they are not based upon incidents in our own history. If we disagree with them it must be because their authors are men whose experience and position do not entitle them to speak authoritatively; because the armament of the European artillery is different from that of our own; or because the nature of our terrain is so different from that of Europe as to render necessary the retention of an organization here which has been found wanting there. As to the first consideration, it is sufficient to say that Von Schell is a veteran artillerist whose service includes the Franco-German War; Hohenlohe was a veteran of three wars, and he commanded the artillery of the Guard Corps in the great artillery conflicts of St. Privât and Sedan; Von der Goltz, one of the most accomplished and experienced officers of the German service, is also a veteran artillerist; and Bronsart von Schellendorf, who is a general of experience and the War Minister of the German Empire, served with Von Moltke on the staff of the King of Prussia in the greatest artillery battles that the world has yet seen. Certainly the experience of such men cannot be lightly rejected. As to the second consideration, the guns in our service are practically the same as those employed in Germany, and are much more powerful than those in use in 1870-71. Finally, the terrain in our country is different from that of Europe, but this difference is in favor of the abolition of the artillery reserve, for the use of such an organization requires of course that it should be promptly available in battle, and for this reason good roads are imperative. Our roads are immeasurably worse than those of Europe, and as a consequence our artillery reserve is still less likely to be in the right place at the right time than a similar organization would be in Europe.

There is nothing in the theories of these writers that is not based on actual occurrence. When a superiority of artillery fire was needed at Wörth, the artillery of the V. and XI. Prussian Corps was combined in the great battery of 120 guns between Dieffenbach and Gunstett; and when it was found necessary to bring an overwhelming fire to bear on St. Privât a formidable battery of 192 guns was formed by consolidating the artillery of the Guard and Saxon Corps and reinforcing from the corps artillery of the X. Corps. No difficulty whatever seems to have been found in utilizing the artillery of the corps that were held in reserve for every purpose that could have been subserved by an

artillery reserve. Indeed we find in the battle of Gravelotte, the corps artillery of the III. Corps designated as an artillery reserve, and its guns were finally brought into action, though the infantry of the corps was not engaged. Nothing would show more clearly the manner in which a substitute can be found for everything that could have been expected of the old artillery reserve.

But the fact that in 1859 the artillery reserve cut absolutely no figure at all—the Austrian reserve artillery not firing a shot in the whole campaign; that in 1866 the Prussian artillery reserve was utterly worthless; that in 1870 the French artillery reserve was of no earthly use,—all this as well as the fact that the most vigorous and admirable use was made by the Germans of their artillery (in which the army reserve was unknown) in 1870 will doubtless be alike ignored by some people on the ground that it is not derived from “our own experience,” and that we ought not to be expected to pay any attention to “foreign theories.” Passing over the fact that such objection would, if carried out to its logical conclusion, cause us to seek tactical knowledge for our present use in Brandywine or Lundy’s Lane rather than Sedan or Plevna, let us see whether this European experience differs so much, after all, from our own.

In the Army of Northern Virginia the artillery reserve was broken up early in 1863, and the batteries were distributed among the corps; each corps having five battalions of artillery, three of which served as divisional and two as corps artillery. As to the wisdom of this change and the good results following from it, there can be no doubt. General Pendleton, Lee’s chief of artillery, says: “Having assigned the reserve artillery battalions, I have now no special charge, but superintend all the artillery, and direct in battle such portions as may most need my personal attention. This is a better arrangement, I think.”*

General Alexander, the chief of artillery of Longstreet’s corps, also found the new organization altogether more satisfactory and efficient than the old one. The army artillery reserve, says he, “not being in intimate relation with the infantry, which always develops the situation, and being invariably put on the march either behind the infantry commands, or on some road to itself, was never promptly available on an emergency. Indeed, if the history of the general reserve artillery during its entire existence be investigated, it will be found that, although excellent in ma-

* “*Memoirs of William Nelson Pendleton,*” p. 276.

terial and comparatively so in equipment, the service that it rendered was greatly disproportionate to its strength." *

That the artillery organization of the Confederates was an efficient one is conceded by the highest artillery authorities among their opponents. In his description of the battle of Gettysburg,† General Tidball declares that "the whole of the artillery of both armies was fought up to its fullest capacity." This being the case, the corps artillery in the Confederate army must have answered every purpose that could have been met by an army artillery reserve. On the third day of the battle, Pendleton posted the battalions of batteries of Longstreet's and Hill's corps in the edge of the woods along Seminary Ridge and towards the Peach Orchard in such a manner as to have a converging fire upon the part of the Union position to be assaulted. He says : " By direction of the commanding general, the artillery along our entire line was to be prepared for opening, as early as possible on the morning of the 3d, a concentrated and destructive fire, consequent upon which a general advance was to be made. * * * For some cause, the expected attack was delayed several hours. * * * At length, about 1 P. M., on the concerted signal, our guns in position, nearly one hundred and fifty, opened fire along the entire line from right to left, salvos by battery being much practiced, as directed, to secure greater deliberation and power. The enemy replied with their full force. So mighty an artillery contest has perhaps never been waged, estimating together the number and character of guns and the duration of the conflict. The average distance between the contestants was about 1400 yards, and the effect was necessarily serious on both sides. With the enemy there was the advantage of elevation and protection from earthworks; but his fire was unavoidably more or less divergent, while ours was convergent. His troops were massed, ours diffused. We, therefore, suffered apparently much less. Great commotion was produced in his ranks, and his batteries were to such an extent driven off or silenced as to have insured his defeat but for the extraordinary strength of his position." ‡

In regard to the silencing of the Union guns, Gen. Pendleton is in error, as the cessation of fire was ordered by General Hunt,

* Birkhimer's " Historical Sketch of the Artillery, U. S. Army," p. 106.

† " Artillery Service in the War of the Rebellion." JOURNAL OF MIL. SERV. INST. Vol. XIII.

‡ Official Report of Gen. W. N. Pendleton, C. S. A., Chief of Artillery.

to save ammunition for the assault which he foresaw would follow the enemy's cannonade. But there is no doubt as to the tremendous and effective artillery fire hurled by the Confederates against the Union position,* and their effective massing of corps artillery worthily foreshadowed the artillery tactics of the Germans seven years later. We find no regret expressed by Pendleton, Alexander, Poague, or any other Confederate artillerist that the artillery reserve had been broken up, nor is there the slightest hint by any of them that such an organization would have enabled them to accomplish one iota more than they did. When did the Army of the Potomac, with its artillery reserve, ever succeed in preparing the way for an infantry attack with a cannonade so powerful as that which the Confederates directed against our lines at Gettysburg?

Let us consider the condition of the Union artillery in the same battle. That artillery, too, had been recently given a new organization—an organization which vastly increased its efficiency, and one, by the bye, from which many erroneous conclusions seem to have been drawn. The organization of the artillery in the Army of the Potomac had been very unsatisfactory. Besides the artillery reserve there had been both corps and divisional artillery. Four batteries had been assigned to each division, and when several divisions had been organized into a corps, at least half the divisional batteries had been grouped into a corps reserve—or, as we would now term it, into corps artillery. The divisional artillery had become an absurdity, for the reason that the divisions had been so reduced that they were scarcely larger than brigades, and the divisional artillery, as it then existed, accordingly constituted practically nothing more or less than *brigade* artillery, which has been condemned by experience everywhere as a wasteful dissemination and frittering away of artillery force.† Under these peculiar circumstances, the abolition of the divisional artillery became a positive necessity. The corps artillery under the new organization consisted of a brigade, composed of four or more batteries. The artillery reserve consisted of four brigades. Much adverse criticism has been passed

* See Official reports of Generals Hancock, Gibbon, and Hunt.

† At Gettysburg the Union infantry, numbering less than 80,000 men, consisted of nineteen divisions. Such diminution in the strength of divisions was without excuse, for though our vicious system of recruitment caused the veteran regiments to dwindle in strength, the brigades and divisions could have been left at their normal strength by increasing the number of regiments in each brigade.

on the organization of the artillery of the Army of the Potomac prior to the Gettysburg campaign ; but it is generally conceded that in that campaign its organization was at last satisfactory, as it enabled it to be "fought up to its fullest capacity." Now, let us note that the Confederate artillery organization in that campaign was almost identical with that of the artillery in the European armies of the present day ; let us observe, too, that there can be no doubt that the Confederate artillery was efficiently handled ; and, finally, let us take into consideration the following words of Gen. Tidball : "The divisions in Lee's army were almost equal in strength to corps in Meade's army. To each of his nine divisions of infantry was attached a battalion of batteries—a battalion being synonymous with a brigade in the Federal army. The battalions of Lee's artillery reserve were, for this campaign, distributed to the three infantry corps—two battalions to each corps. The cavalry had one battalion of seven batteries. Remembering that divisions in Lee's army were but little less than corps in that of his opponent, it will be perceived that the artillery organization and assignments in the two armies were quite similar."* In other words, when we had finally placed our artillery in such a shape that it gave satisfactory results, the organization evolved by our own experience was not greatly different from that now recommended by the distinguished European artillerists who have been quoted in this paper. To be sure, we had an artillery reserve, but let us remember that our army was in fact, though not in name, an aggregation of *divisions* instead of *corps*† and that we were accordingly in reality without *corps* artillery, which was in a measure replaced by the artillery reserve. Had we possessed at Gettysburg a proper organization of divisions and corps of suitable size, with divisional and corps artillery, and had the chief of artillery been empowered to combine the artillery of several corps (as his opponent was), and to use the artillery of the reserve corps for such reserve artillery as he might need, there is no doubt that he would have done all that his opponent did with such an organization—all that he himself did with the organization that he actually had—namely, that he would have fought his artillery "up to its fullest capacity."

It would be both absurd and unjust to attempt to deny that

* JOURNAL OF THE MILITARY SERVICE INSTITUTION, Vol. XIII., p. 474.

† The Army of the Potomac at Gettysburg consisted of seven corps, each about the size of an ordinary division.

the artillery reserve of the Army of the Potomac rendered great and invaluable service on many occasions. Its record is part of the glory of our army. At Malvern Hill and Gettysburg it contributed enormously to the victory, which probably could not have been gained in either case without the help of its guns. But it may be fairly claimed that this force of artillery was of such inestimable value, not because it was an artillery reserve, but because it was under the control of a preëminent artillerist, and that a similar force of artillery could have been obtained on the battle-field, under similar control, had the artillery organization been the same as that of the Army of Northern Virginia—the same as that now approved in Germany and France.

To the assertion that the corps artillery of the several corps can perform all that could be expected of an artillery reserve in the way of reinforcement and obtaining a superiority of fire, it may, perhaps, be objected that such artillery is not adequate or generally available, and that the withdrawal of the corps artillery from a reserve corps would seriously weaken the corps from which it was drawn. Let us consider, then, each of these possible objections. In the first place, as Hohenlohe points out, the great range of the guns of the present day enables artillery, by merely changing the direction of its aim, to lend support to the right or left, which it could formerly have contributed only by a change of position. Thus time is saved, and the object of the massing of the guns which was formerly betrayed to the enemy by the movement of the batteries, is concealed.* Still, reinforcement will undoubtedly be demanded in the crisis of battle, and this reinforcement can, as we have seen, be drawn from the corps held in reserve. Such artillery will surely be available, for no general should place his reserve in line of battle until the critical moment for its employment arrives. The entire artillery of a single corps at full artillery strength would number 120 guns—more than the entire army artillery reserve under General Hunt, and if added to that of a single corps in the first line it would give a total of 240 guns. If the corps artillery alone were drawn from a single reserve corps, leaving the divisional artillery, the reinforcement would amount to 48 guns and would increase the guns of the reinforced corps to 168. It would certainly seem that such artillery would, therefore, be both available and ample. As

* This would seem to be a matter of no small importance since the introduction of smokeless powder.

to its weakening the corps from which it is drawn, let us bear in mind that the corps itself is held in readiness to be thrown in at the point where its presence will be most needed. If acting on the offensive, its employment will be at the very place where the artillery, engaged in paving the way for assault, has been reinforced, and it will be simply following its own guns. If acting on the defensive, it will be thrown into the place of danger where its own guns have preceded it. It would be manifestly absurd to suppose that in either case, the artillery of the reserve corps would be held back only to move forward simultaneously with its own infantry.

Moreover, as Hohenlohe points out, it is not now such a difficult matter to withdraw the artillery as it was in the old days when smooth-bore guns committed to action at short range were in "for good and all"; and the combination of the artillery of several corps, even if all are engaged, is, therefore, an easier matter than in the old days of less powerful cannon. And here it may be observed that the combination of corps artillery—or even divisional artillery—for the purpose of obtaining a superiority of fire, without using an artillery reserve, is no new idea. Senarmont obtained the powerful batteries with which he smote the Russians to their destruction at Friedland, by combining the divisional batteries of Victor's corps. At Wagram, the great battery which filled the gap caused by the withdrawal of Masséna's corps, and which prepared the way for Macdonald's assault, was formed, it is true, by bringing up the reserve artillery (*i. e.*, the artillery of the Guard) and uniting it with the artillery of the adjacent corps; but on the French right, Davout and Oudinot paved the way for their success by massing the artillery of their two corps and smashing the Austrian front. At Borodino, the great battery of 200 guns at the ravine of Semenofskoi was formed, not by the artillery of the Guard, but by combining the artillery of several corps.

In fact, Napoleon's method of using artillery was not so unlike the German method of 1870-71 as it might at first appear. The reserve artillery of the Emperor's army was the artillery of the Guard, consisting of 96 guns. Now, it should not be forgotten that the Guard constituted the permanent reserve of the army. The Germans, on the other hand, had no permanent reserve, but held in reserve such corps as seemed most suitable or most available at the time of the battle. Napoleon drew his re-

inforcements of artillery from the permanent reserve, and Frederick Charles obtained them from the temporary reserve; but in each case they were drawn from the *reserve corps*, and there is absolutely nothing in history to show that the *reserve corps* in either case was subjected to the least inconvenience thereby. Indeed, Napoleon's system seems to have had quite as much in common with the present European methods as it had with the independent "army artillery reserve" which grew up in imitation of Napoleon's tactics, while by no means being in keeping with his organization.

It may, perhaps, be objected that the massing of the artillery of the different corps would be opposed by the corps commanders, who would be reluctant to part with their guns. Such an objection is implied by the comments, more than once made, on the fact that at Fredericksburg the division commanders objected to giving up their divisional artillery to General Hunt, for the purpose of forming a mass of artillery with which to cover the passage of the Rappahannock, and that they consented only on condition that the batteries should be restored to them as soon as they moved forward to the attack. Let us observe that this was a case of *divisional* instead of *corps* artillery. It is one thing to strip a division of its artillery, and quite another to take the corps artillery, which bears the same relation to the corps that the artillery reserve formerly did to the army.* It is to be presumed that the generals commanding corps understand fully the functions of artillery, and that their relations to the chief of artillery are clearly appreciated. No commanding general fit for his position would fail to see that necessary regulations on these matters were clearly drawn up and promulgated. That much of the artillery that was returned to the divisions on the occasion mentioned stood idle in the streets of Fredericksburg, does not seem to prove anything at all in regard to the artillery reserve. It proves one, or all, of three things: either that the division commanders did not understand how to use their artillery; that the circumstances of the battle were not such as to admit of the effective use of the divisional batteries; or that the number of

"It should be understood, however, that the divisional artillery, while generally remaining with the divisions, must always be at the disposal of the commanding general. Circumstances would not usually render it necessary to withdraw the divisional batteries from their divisions, but it should be clearly understood that when such a necessity arises the division commanders must not demur."

guns assigned to the divisions was too great. Both of the first two suppositions *may* have been correct; the third was probably the case, and the proper remedy lay in assigning the surplus guns to the corps artillery, where they could have been used by the corps commanders, or placed under the orders of the chief of artillery, as circumstances might have demanded.

The artillery reserve is not in keeping with the artillery tactics universally prescribed to-day; for the very essence of the present tactics is the *prompt* employment of a great force of artillery, and this is rarely facilitated, but is generally retarded, by the use of an artillery reserve. Especially in the attack, a superiority of artillery fire is necessary at once. The assumption of the offensive naturally implies the superior strength of the assailant and the consequent superior artillery fire on his part from the beginning; but even if the forces are equal and have the same amount of artillery, let us see what will be the condition of affairs if one has a large portion of its artillery in a general reserve and the other has all its artillery distributed to the different corps. The divisional artillery of each opens the fight, and is reinforced as quickly as possible by the corps artillery. The one without a general reserve derives from its corps artillery a prompt and great reinforcement, while the other obtains in a similar manner a smaller reinforcement, waits for further additions to its strength from the general reserve, and finds itself overmatched before the final reinforcement comes up; for the artillery reserve can scarcely be expected to be so near at hand as the corps artillery, and its guns may *usually* be counted upon to be the last in action.

I am aware that this last statement may be met with the reply that at Malvern Hill and Fredericksburg the batteries of the artillery reserve were among the first in action, and that in the second day's battle at Gettysburg a battery of the reserve fired the first shot. I am aware that it is said on good authority that the artillery reserve of the Army of the Potomac was generally the first in the fight *; but let us see whether this can ordinarily be the case. Malvern Hill was purely a defensive battle, in which the position was taken up deliberately. At Fredericksburg, deliberate preparations for attack was made against an army which stood quietly on chosen ground to await battle. At Gettysburg on July 2d, the armies had been a day in each other's presence, and ample opportunity had been afforded for bringing up guns from the

*Gen. Tidball in JOURNAL OF THE MILITARY SERVICE INSTITUTION.

reserve to the defensive position selected. When operating vigorously on the offensive, the case was very different. Of so little value was the artillery reserve in Grant's energetic campaign in 1864, that it was sent back to Washington as a useless encumbrance. It may be said that this was because of the exceptionally difficult terrain on which the army was fighting. Very true; but it is a significant fact that Lee, operating, of course, on the same terrain, but with his artillery distributed to the corps, did not find it necessary to send a single piece back to Richmond. Moreover, we may ask, In what *offensive* campaign or battle was the artillery reserve of the Army of the Potomac ever used with an effect at all commensurate with the number of its guns or the cost of its maintenance? Its deeds were all on the defensive, and it still remains to be demonstrated that even in this way it accomplished anything that could not have been accomplished by Hunt had his position and the organization of his artillery been the same as those of Pendleton.

It is said that Gen. Hunt objected to the name "Artillery Reserve"; that he preferred the term "Headquarters Artillery"; and that he urged the most prompt and vigorous use of the artillery reserve in battle. But, from the very nature of things, the artillery reserve cannot generally be the first in action. Whatever name we give it, it will almost certainly become a reserve in fact. To have the guns of the artillery reserve first in action, it must march with the advance guards of one or more of the different columns. Or, omitting such an extreme case, it must at least march well to the front. Now, where shall it march? If it be combined with the artillery of one of the corps, it will make an enormously long column of guns, covered only by a small force of infantry (if the artillery is to be promptly used), and will impede the employment of the corps, which will thus have, moreover, at least twice as much artillery as it can immediately use. In order to get the artillery of the reserve promptly into action, and at the same time obviate the inconvenience resulting from attaching it to a single corps, it might, perhaps, be distributed on the march to the several corps, in which case it would be broken up as a body, and would be merely an augmentation of the corps artillery. It must, then, in order that it may preserve its organization and at the same time be first in battle, march by a separate road, in which case the mere matter of proper defense and support will require such a force of infantry, that, instead of attach-

ing the artillery to the corps, we would practically be attaching a corps to the artillery—which would in effect be the same thing. In fact, the artillery reserve must invariably march behind the infantry commands or on some comparatively safe road by itself, and it cannot, therefore, be expected to be available in the earliest stages of the battle. This has been the unbroken experience of the artillery reserve, except only when the battle has been purely defensive or the army has been permitted by the passiveness of its adversary to make its preparations for attack with great deliberation.

The lessons of the War of Secession, both strategical and tactical, are many and important; and the history of that war constitutes a mine of military lore in which we may profitably delve for many guides for future conduct in campaign and battle. But we should remember that since that conflict almost as great a time has elapsed as the period which intervened between Waterloo and the Crimea, and that the improvement in weapons, and the consequent changes in organization and tactics have been greater than any corresponding changes between the battle of Bunker Hill and the battle of Bull Run; that the artillery of the Civil War consisted of smooth-bore and rifled guns which were mere playthings in comparison with the field artillery of the present day; and that theories based on the experience of the Civil War are not *always* applicable to the changed conditions of the new era of warfare on which we have entered. We should, therefore, weigh carefully the lessons of our war, and before accepting them, satisfy ourselves that they are still suited to our needs, and that in following them we are not applying smooth-bore principles to an age of powerful artillery, and turning the tactical clock back thirty years. We should also beware of accepting a part of the experience of one army as representing the entire experience of both.

In conclusion, it would seem that the segregation of one-fourth to one-third of the field batteries to form an artillery reserve for the army is plainly a sacrifice of the power of throwing a preponderating force of artillery into action promptly, save in a few exceptional cases; that the organization of such a reserve is neither in accordance with the experience of recent European wars nor in keeping with the best lessons of the War of Secession; that the artillery reserve has no place in any system of modern artillery tactics; that there is nothing that could be done with

such an organization that cannot be done equally well without it; and that the organization of an artillery reserve often means an elimination from the fighting force of the army of much artillery that could be employed with effect if assigned to the different corps. In fact, unless we reject the opinions of many of the ablest and most experienced artillerists of the present day, we must conclude that the artillery reserve is an antiquated organization for which we have no further use.

MARTIAL LAW AND SOCIAL ORDER.

BY CAPTAIN JAMES CHESTER, 3D U. S. ARTILLERY.

IN view of the anarchical propaganda now going on in this country; its possible consequences in some of our large cities; and the inability of our civil magistrates to deal with certain kinds of lawlessness so painfully apparent in certain recent events; it behooves the army officer to seriously consider his duties and liabilities under the law, should he be called upon to assist the civil magistrate. And this becomes all the more necessary because of the dual form of government under which we live, and the fact that the soldier in this country while on such duty is held responsible to one government for his actions and to another for his obedience.

The army officer sent out on the call of a civil magistrate to overawe incipient rioters and thus prevent bloodshed, marches, as a rule, without definite instructions. His superior, careful not to commit himself, couches his commands in equivocal language, or in very general terms; and the officer, before he has had time to thoroughly digest them in connection with the situation, finds himself face to face with an excited mob without any distinct idea of what he is there for, or why he is there at all.

The latter question should be answered first. Why is he there? The ready answer, "In obedience to orders," does not completely cover the case. If it did, he ought to be responsible for his actions under them, only to the authority from which they came. But this is very far from being the case. He is, and he knows he is, answerable to the laws of the land. He is hampered with that unanswerable question, "Are his orders legal?" The key-note

of his training has been obedience, and his natural impulses under any set of circumstances will be in that direction. But here he is, in presence of what the law would call an unarmed mob of men, women and children, and ordered to protect certain private property, let us say, which that mob is determined to destroy. A barricade of women and children is between him and the active rioters. Shall he shed blood in forcing a passage?

Our people, following English traditions, have exhibited at all times the greatest repugnance to military interference in civil affairs. There is nothing in the statutes to justify such interference. They provide certain machinery for the maintenance of order and the enforcement of law, but the army constitutes no part of it. On the contrary, the custom which had grown up during reconstruction times, of using the army whenever a case arose presenting features difficult to deal with, is expressly prohibited by law. The officer who finds himself in presence of a riotous mob then, and remembers the language of that law, will not hesitate to pronounce the orders that sent him there illegal. Of course he does so at his peril; but the peril is no greater, and perhaps not so great as shedding blood in obedience to them would certainly be. Besides it is always better to suffer for well doing than for evil doing. If a man must lose his life, it is better to die as a martyr than as a transgressor, and his own conscience must determine which is the martyr rôle.

That the army may be legally used to protect and defend public property needs no argument. But so far as private property is concerned there is nothing in the statutes to justify it, as long as civil law remains supreme. Still, the men of the army, commissioned and enlisted, are citizens, and as such bound to answer the call of the civil magistrate when that call is legally made. An illegal demand, even of a magistrate, may be disregarded by any citizen. The question therefore, When and in what way may the magistrate make a legal demand upon soldiers as citizens, to turn out and assist him in maintaining order? becomes an important one.

The ordinary force provided by law for the maintenance of order and which is always at the command of the civil magistrate, is the police force. The extraordinary force includes every citizen of the state. Whenever the ordinary force at his disposal fails, the magistrate may call on the extraordinary; but not till then. It is not sufficient that, in his judgment, the ordinary force would

prove inadequate. It must have tried and failed. The magistrate must exhaust his powers with the ordinary before he calls on the extraordinary. It follows then that when the police force has been routed and not only deemed to be, but proved to be inadequate and powerless, the magistrate may legally call on any or all good citizens, with or without arms, to aid him in the maintenance of order. And such a call may be made on any officer or soldier in the state. But they are called as citizens. The civil law does not recognize the soldier or any of his obligations. It deals with him as a citizen pure and simple.

Here then we have another question which the officer or soldier who is called upon to assist the civil magistrate must answer in advance—and each must answer for himself—namely, Have the ordinary powers of the magistrate been exhausted? If they have, and he must answer that question at his peril, he is bound to obey the call or suffer the consequences of refusal.

If our reasoning is correct thus far, it follows that no magistrate can legally call out any military organization. He must deal with individual citizens. The question therefore arises, would the citizens, who are also officers and soldiers of a military organization, answer the call of the magistrate as an organization or as a crowd of men? In other words, could the commander of soldiers, so called to the assistance of the civil magistrate, legally exercise command over them while on such duty?

There can be no doubt that every citizen so called out, must use his utmost strength and skill in aid of the magistrate, and that, for the more effective application of his powers, he may voluntarily act under the leadership of any citizen in whom he has confidence. There is just as little doubt that the civil magistrate can legally organize his *posse* as he pleases. A military commission *per se*, confers no right to command on such occasions. The magistrate may put the captain under the command of a corporal if he pleases, and violate no law. As already said, the soldier as such is totally unknown to the civil law. It follows therefore that the Rules and Articles of War are dormant while the soldier is on such service, and that an officer has no legal right to order out his command at the call of the magistrate. It follows also that every officer and soldier is personally responsible for his own actions under the laws of the land while on such service.

Still another question may arise to puzzle the army officer in

connection with this kind of service which must now be discussed, namely, What is meant by the civil magistrate? To this we should answer, every officer in the civil executive from the chief magistrate to the town constable, each in his own province and degree. Of course the constable could exercise no power in the presence of the mayor or the sheriff, without special orders, and the mayor or sheriff would be powerless outside his territorial jurisdiction or in presence of the Governor of the State. In the national civil hierarchy there are very few grades. The deputy marshal, the marshal, and the President.

We now approach the most interesting question connected with this subject. Can the chief magistrate of the nation order a military organization to the assistance of the civil authorities? The question has never been judicially decided in this country; but it has in England. In 1796 Lords Eldon and Redesdale rendered a decision covering the point, which reads as follows: "We conceive His Majesty may, by orders given to his troops, make assistance to the civil magistrate in the lawful execution of his civil duty, a part of their military duty; that the troops acting at the requisition of the magistrate in obedience to such orders would still be subject to military discipline, and would therefore act as a military body commanded by military officers."

Here it is the military organization and not the soldier as a citizen that assists the magistrate. The assistance is made a military duty and would be performed under the Rules and Articles of War. It follows, therefore, that the soldier under such circumstances would be responsible for acts done in obedience to the orders of his commanding officer, to the military authorities alone under these articles. It follows also that the officer in command would be responsible, under the same articles, to the chief executive only.

But such a condition of things is not distinguishable from a state of civil war. The riot which requires such action, has overthrown the civil machinery of the state and become rebellion. Not only has the police force tried to suppress it and failed, but the grand posse comprising, theoretically at least, all the good citizens of the state, has been defeated. The order of the chief executive then, which English judges have said the crown can legally issue, is the equivalent of a proclamation of martial law. Civil government has exhausted its powers, and military government comes to the rescue.

But can these principles be applied to our system of government? Here the State governments are the legal conservators of law and order. Until the State authorities apply for assistance in the constitutional way, the national executive is powerless to interfere. When such application is made, however, the President may order out the national troops. What, then, does such an application mean? Undoubtedly it means that the powers of the State have been exhausted and the riot remains unsuppressed. And as the citizens of the State are also the citizens of the nation, the civil machinery of both governments has broken down. Riot has become rebellion.

Troops ordered out by the President under such circumstances, march to the assistance of the magistrate as military organizations, and operate under the Rules and Articles of War. Civil law is entirely in abeyance for the time being, and the civil magistrate himself must stand aside until order is restored. These may be unpalatable truths to the civil magistrate, but they are truths, and the sooner they are recognized as such the better for the community. The anomaly of putting national military organizations under the command of the civil magistrate of a State, and the absurdity of holding soldiers responsible to one government for their actions and to another for their obedience must end in inefficiency. The moment a soldier realizes the perilous position in which his government has placed him, his heart will go over to the rioters. He will at the very least, feel and perhaps exhibit, an unwillingness to obey.

The status of the soldier while assisting the civil magistrate, as viewed by English and American judges, is simply that of an armed citizen. Orders cannot relieve him from personal responsibility. It is a favorite delusion that the orders of the magistrate carry absolution with them for acts done in obedience thereto. But such orders could not save the militia officers of Pennsylvania from trial by the civil courts for acts done during the Carnegie riots. That they were promptly acquitted only proves that the people, as represented by the jury, were friendly; not that the law recognized their military obligations, or the validity of the magistrate's mandate. Sending troops to report to the civil magistrate is simply cruel. Troops are no part of our civil government and they never should be used until the legal machinery has broken down and civil officers have taken back seats. Then, and not till then, the chief magistrate of the nation

in his capacity of commander-in-chief assumes control and martial law exists by virtue of that act alone. The fact is more important than the formula just as it was in the case of our war with Mexico.

If these principles were recognized the army officer would stand on a stable foundation whether he stood in front of a riotous mob or a foreign enemy. But these principles are not likely to be recognized. Civil officers will never admit their own incompetency until red-handed war drives them from their seats. Civil machinery encourages rebellion. Rebels and rioters know what it can do and discount all its delays. The old-fashioned formula of reading the riot act was a piece of legal humor highly appreciated by a mob. They knew they were safe until that ceremony was over, and so pelted the soldiers to their hearts' content. But it must have been a terrible ordeal for the military. Like sheep brought to the slaughter they suffered silently, biding their time, with such consolation as prospective trial by a jury of the mob, for merely doing their duty, could afford. And even where the farce of reading the riot act is omitted the situation is but little changed. The ordeal is shorter but the uncertainty remains. The gallows is still visible in the back-ground. Such conditions are not conducive to loyalty. It is cruelly to subject faithful servants to such an ordeal.

What then is the remedy? Manifestly proclamation of martial law in the riotous district, as a preliminary to the appearance of national troops. National troops should never go to assist the magistrate but to restore him. Soldiers in their capacity of citizens may assist him and be individually responsible for their acts; but soldiers in organized bodies should be ordered out only when the civil machinery has completely broken down. And then they should be responsible for their acts as well as their obedience to the government which they serve.

But these views are not popular. Men say that the state can never be in danger from the people, because the people are the state. There is some truth in that statement and also some anarchy; and anarchy is the great danger of the day. Like a portentous cloud it looms above our social horizon, visible to everybody. But people say it will pass away. There will be no storm, or, if there is, it will not amount to much. In a democratic community the policeman's baton is sufficient to maintain order. We hope the optimistic prophets are right. Still it is

wise to carry an umbrella even when the weather is "set fair." To be prepared for any emergency is a duty which the State owes to the nation. The status of the law-and-order-men should be made secure. If the threatened storm of anarchy should break out anywhere, and upset the civil machinery of the State, and national troops should be called on to set the machine in order again, is it asking too much to demand that the halter, which it seems they have to wear, should be held by the government which they serve and not by their enemies?

"No man can serve two masters," and yet the young men who are trained to be our commanders are taught that he can. At least the text-book which they study says that soldiers ordered out to restore the civil magistrate are "Under the command and direction of the President," but that they must act, "as far as practicable in concert with the action or views of the state authority." (Winthrop's Abridgment of Mil. Law, 336.) A cheerful position that to be in. The views of the State authorities who have permitted the people to fall into riot or rebellion, cannot be worth much. Yet those views are to be the key-note of our conduct, in suppressing the conditions which they have created. Can any body doubt that discords will arise. The State authorities have been timid, and rascaldom has found it out. When rulers are timid, rascals are bold. They even get to believe that right and justice are with them. When they have reached that stage, nothing but the argument of blood will convince them of their error. And this argument can hardly harmonize with the "views" above referred to. But the President's orders are "Disperse the mob," and it will be dispersed. Then the newspapers will declare the argument of blood unnecessary. The defeated rioters, now masquerading under the name of *the people*, will demand revenge under the name of *justice*; the timid ruler again at the helm of affairs dare not deny them; some officer is indicted; tried; convicted; sentenced and hanged. And what can the President do about it?

Manifestly the answer to that question is all-important to the soldier, although insignificant perhaps to the citizen. And among citizens no class is less able to appreciate the soldier's position than the lawyers. The Lord Chief Justice of England, in a speech of six hours duration, argued that there is not, and never was, such a thing as martial law. According to Car-

lyle's paraphrase of the speech, he said, "That any governor, commanded soldier or official person, putting down the frightfullest mob insurrection. * * * Shall do it with the rope round his neck by way of encouragement" (Carlyle's Misc. Essays, Vol. VII., p. 209). And that is the way an American soldier has to do it, with the added iniquity that his enemy holds the end, and pardon is impossible. Of course Thomas Carlyle believed in no such nonsense. On the contrary, his reply to the Lord Chief Justice was: "Lordship, if you were to speak for six hundred years, instead of six hours, you would only prove the more to us that, unwritten if you will, but real and fundamental, anterior to all written laws and first making written laws *possible*, there must have been, and is, and will be, coeval with human society, from its beginnings to its ultimate end, an actual martial law, of more validity than any other law whatever." "Lordship, if there is no written law that three and three shall be six, do you wonder at the Statute-Book for the omission. You may shut those eloquent lips and go home to dinner. May your shadow never be less; greater it perhaps has little chance of being." (Carlyle's Misc. Essays, Vol. VII., p. 210.)

These are the views of a philosopher, a profound thinker, who could see farther perhaps into the veracities of things than any man of the century. He saw that social order rested on a foundation of force, and that that foundation is older than, and in fact the father of, what is now recognized as liberty. The civil law and the civil power are the children of a military father who still lives and reigns, although he does not govern, except in emergencies when the feeble fingers of his children lose control. Then he comes to the front in the Godgiven majesty of might, brooking no control, acknowledging no equal. He it was who first brought order out of chaos; created right; established order; and ordained law. Might is the minister of God on earth. Everything endures because of him—empires and kingdoms, principalities and powers. Nations live because he lives in them. When he departs, grim death is at the door.

These views may not be pleasant, but they are timely and true. A storm is coming. The storm-cloud is visible even now. Prudence suggests that the nation cast an anchor to windward and make all needful preparations for the possibilities of the storm. Civil government may be overthrown in places, and national troops may be called on to restore it. Make it possible

for them to do so speedily. Take the halter which they have to wear out of the hands of their enemies. Unfetter the might of the nation by proclaiming martial law as a prelude to the employment of national troops, and then, if the nation deserves to live, it will.

RECRUITING AND TRAINING OF THE COMPANY.

BY LIEUT. CHARLES MILLER, 11TH U. S. INFANTRY.

A declaration of war, so serious in its consequences, is more easily carried by a large assembly, in which none of the members bear the sole responsibility, than by a single man however high his position, and a peace loving sovereign is less rare than a parliament composed of wise men.—VON MOLTKE.

INTRODUCTION.

WAR at the present day differs very materially from war in former times, in its causes probably as much as in the mode of its prosecution. No longer are small armies of professional soldiers sent for dynastic ends to conquer a city or a province and then make peace. The wars of the present day call whole nations to arms; there is scarcely a family that does not suffer by them. The different seasons of the year have no bearing on the progress of hostilities, which are only limited in duration by the exhaustion of the financial resources of a state and the entire destruction of its armies. As long as nations continue independent of each other there will be disagreements, and the time is yet far distant when international arbitration will take the place of the force of arms. Universal suffrage is no antidote to the poison which produces the war fever. Nations with republican or democratic forms of government where liberty and equality, law and order, right and justice, peace and war rest entirely on the people's will, are quite as likely to plunge into war as the veriest despotism, and the words of the experienced Von Moltke, quoted above, are but too true.

As war and its natural consequences affects the entire population of a state individually and in the aggregate, either directly or indirectly, what is more natural than to expect well directed efforts to provide adequate means for the protection of a state and for the defense of its sovereignty. This the States do by maintaining armies and navies and providing an effective system of coast and harbor defense, if bordering on the sea.

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Whatever definition may be given the word "Army," it is essentially an armed body of men, which a state maintains for purposes of war. A multitude of men, even when armed and uniformed, may still be a mob. The work of converting this raw human material into a fitting instrument of war, an instrument not inert but living, comprises organization and training and the latter includes drill and discipline. That modern army will serve its state best which is composed of the best men available, morally and physically, and which has attained the highest and most thorough state of discipline and training. If this is so the two-fold work of an army is first to obtain the best material and then to give it the best possible training. In treating a question of a national character, certain national characteristics cannot be disregarded; a proceeding which would be highly beneficial in one state may be wholly detrimental in another. The form of government and its policy, the state of civilization, the spirit of the public institutions, special traits and characteristics of the population must be taken into consideration.

In states with universal compulsory military service, the taking into the service of inferior and probably undesirable material, is not a matter of choice but of necessity; not so in states where such service does not exist.

TACTICAL ORGANIZATION OF THE COMPANY.

Organization is of two kinds—tactical, that which relates to the preparation of men for battle—and administrative, that which looks to their maintenance in peace as well as in war. It is the division and subdivision of the mass into parts and units, the fixing of the chain of responsibility from the general-in-chief down to the commander of the smallest subdivision; it implies that every man's work is defined, that he knows exactly what he must answer for and that his authority is co-extensive with his responsibility.

In all armies in the world the company has been invariably considered as the first or smallest independent command. The maximum strength of our companies as fixed by law is on a peace footing 60 men and on a war footing 100 men. For tactical purposes the company is divided into two platoons, each platoon into two sections and each section into three groups. The subdivisions are commanded by the lieutenants and the non-commissioned officers and the whole is under the command of the

captain or company chief. The changes and improvements in the armament of infantry are the principal causes of the successive reforms in the tactical formations of troops for fighting, and magazine rifles with reduced calibre, flatter trajectory, increased range and penetration, accuracy and rapidity, may work unexpected changes. A fair trial of the extended order of fighting on the field of battle is yet wanting and whether the present formation can be retained or must be altered, whether the strength of the company must be increased or decreased, such a trial only will decide. While the Germans raise their companies to 250 men on a war footing, it must be remembered that the causes and conditions which make this necessary and possible are peculiarly national and do not obtain on this side of the Atlantic. In our service a company with a peace strength of 100 men would answer modern requirements of drill and manœuvre better, increase the present (and indirectly also the future) efficiency of our army without the addition of a single officer.

A. Recruiting of the Company.—The tendency in all modern armies is to shorten as much as possible the term of service in the ranks in order to train the greatest number of men to arms in a given time. In time of war our Government must look for soldiers to the volunteers and drafted men. The policy of the Federal Government as well as that of the States has been of late years to diffuse military knowledge among the population of the country and train and instruct as many men as possible. The lesson taught by the last war is bearing fruit. The pension bill is the largest the country has to pay and it brings our expenditures for war quite up to those of foreign countries with their enormous military establishments. These foreign nations spend their money in training men of the present generation for war and incidentally for the more effective discharge of their duties as citizens in private life. This nation, with a reputation for characteristic shrewdness, goes on the principle of ignoring the possibility of war, and then when war does come conducts it in the most unprofessional and wasteful manner and in consequence is never done paying for it. "In time of peace prepare for war."

Where responsibility is borne by so many shoulders as it is in this great Republic, no one in particular feels any remorse or attaches any blame to himself, if through lack of attention and a false feeling of security,—should the unexpected happen,—the results achieved fall far below even moderate expectations.

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The reorganization of the infantry and artillery branch of the service, on the basis of three battalions to each regiment, is only a question of time. But this will not solve the problem of national military training or give more satisfactory methods of diffusing military knowledge among the people.

The efforts of the Government to promote and increase the efficiency of the national guard are well directed and must eventually bear good fruit. But this is not enough. A thorough, effectual and inexpensive method of planting seeds of future military efficiency, a method, which, if carried out in the right spirit, will be of inestimable value first to the country in general and then to the army in particular, is that of actually making our small regular army a national institution for the physical education and military training of a large portion of our younger male population. This appears, at the present day, to be the true mission of our military establishment.

Official reports show that in 1891 the number of men drawing reënlisted pay under Act of Congress of August 4, 1854, was 7832. Men drawing reënlisted pay and increased pay under Act of Congress of May 15, 1872, 5243; total number of men in service over five years 13,075. In 1892 the corresponding numbers were 7772 and 7190, a total of 14,962.

In a State whose policy it is to maintain a small standing army and rely on volunteers and drafted men in time of war, is the present system of reënlisting men for a longer period than necessary to make them efficient soldiers to continue? I do not wish to decry the old system of retaining old, efficient and tried soldiers,—far from it. It was the very best system possible, considering the mission the army had to perform. Old soldiers were invaluable. And at the present day they are the very best element in the ranks and the army is greatly benefitted by their presence. Then why not reënlist them?

The mission of the regular army to protect the settler, guard the Indians and constitute an ever ready, available and efficient force to be used to keep the savage tribes within bounds, warranted the retention of old and experienced soldiers. But this is no longer the principal mission of the army, only secondary. The establishment should become a national military training institute—this is its present principal mission. That this can be effected without detracting from its efficiency, on the contrary increasing the same, I will attempt to show.

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The first question which presents itself for consideration is, how long a term of service is necessary to give a man a thorough training. To retain him any longer than that is depriving the country of an additional trained man.

The private soldier who does not learn all that should be expected of him in three years, will not learn it in five nor in ten or any number of years.

With a three-year term of enlistment and no reënlistments for privates except in special cases (to be appointed to a prospective vacancy in the non-commissioned grade), the country would have the benefit of absorbing annually one-third of our force or say about 7000 well-drilled and disciplined soldiers in the prime of life, well fitted to make their living in civil pursuits and better for having passed three years in the service of their country. Assuming that a man is capable of rendering military service till he is 46 years of age or that a man who has enlisted at any time between his 21st or 25th year is capable of serving his country for 25 years, and making a rough calculation, this system would give the country, with the regular army at the present strength, a constant trained force of about 175,000 men.

There are some 7000 positions in the Bureaus of the War Department in Washington City and at large, comprising clerks, watchmen, messengers, laborers, etc., and action should be taken by the authorities to have these positions filled by worthy soldiers when discharged from the Regular Army.

A three-year enlistment for the privates and no reënlistments would, with the present strength of the army, necessitate the enlistment of 7000 men yearly. Is it possible to procure yearly 7000 physically qualified volunteers out of a population of over sixty millions?

The age limit should be 21 and 28 years.

For the present purpose it is not necessary to produce any statistics showing the per cent. of the male population between 21 and 28 years of age, subject to the jurisdiction of our Government. It is evident that the number will be very large and that 7000 is only a small fraction of it.

Large sums of money are annually appropriated for the recruiting service and while the money is judiciously applied the results are below expectation.

It must be admitted that very little indeed of our army is known by the great bulk of our population; that much and some-

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times all the knowledge possessed by that portion is erroneous and little calculated to raise the army in their estimation and incite their respect and even admiration. It has usually the contrary effect. (Witness recent experiences of regimental recruiting officers.) Whether old-time traditions, deserters, worthless discharged soldiers or malicious newspapers are accountable for this state of affairs, it remains for us to combat against existing prejudice and spread correct information.

Ours is certainly the best paid, fed and clothed army in the world, an army in which the soldier receives the most humane and considerate treatment, and it is a matter of national importance that the people be made aware of these facts. It appears very feasible that an attempt to reach this great newspaper-reading public through the medium of the press, which visits the rich and the poor, the learned and the ignorant, would attain the desired object. Military leaders in the columns of the daily press of the entire country, bringing the army before the people's eyes, giving correct information and impressions regarding it can have only beneficial results. If we combine with this a regimental recruiting service we will have nearly attained our object.

The standard for physical qualification, intellectual and moral, should be as at present. Term of enlistment three years. Allowance of clothing on the present basis. Pay—\$10.00 per month, all paid, none retained, and \$150.00 with honorable discharge at the end of the third year. No increase of pay during term of service.

The recruiting for the regiment to be entirely regimental. With the system of one three-year term of enlistment for privates it will be known exactly how many men will be required for each company each year and consequently for each regiment, namely one-third of the number of privates and such an additional number as may be necessary to replace men lost by discharge for disability or other unforeseen causes. Geographical limits to be assigned for each regiment each year within which to confine the recruiting for the regiment (unless unable to obtain the desired number). Commanding officers of regiments to select recruiting officers from the officers of regiment, for special qualification for the work. Extensive advertising and announcement of the intended tours of recruiting parties to precede their departure from the posts; all necessary particulars may be given in such press notices:

The period of recruiting to be confined to one month in each year, for every regiment in the service. This month to be November. The dates of enlistment for all men enlisted in one year to be as nearly as possible the same throughout the army. This object (the necessity of which will appear hereafter) can be obtained by requiring men who have passed a satisfactory examination to appear on a specified day near the end of the month for enlistment. The men enlisted to be assigned to the companies by the commander of the regiment and to be sent to their destination at once. The work of the recruiting officers to be simplified as much as possible and no uniforms to be carried for issue to the men. Reports made only to the regimental commander and consolidated reports forwarded by him to the superintendent of recruiting service or to the Adjutant General of the army. By this system the army would be brought in closer contact with the population, more care would be exercised by recruiting officers (as they are recruiting for their own regiment and company) and the more undesirable class of men would be kept out of the army. In order to substantiate the last statement it is only necessary to invite attention to the many cases of enlistments of men on account of temporary dissatisfaction, desire of change, failure to obtain work, lack of inclination to work, etc., and not from any preference for the service. The doors of recruiting officers not being open at all times to be resorted to by men on the spur of the moment, the chances of contracting hasty enlistments are materially reduced.

The men being enlisted on about the same date and being assigned to companies, the latter receive all recruits required by them for the ensuing year at about the same time and a systematic course of training of the recruits as well as the older men could be adopted and pursued.

B. The Training of the Company.—Clausewitz said: "In war everything is simple but to secure simplicity there lies the difficulty."

This portion of the subject is best considered under the following heads: 1. The officers. 2. The non-commissioned officers. 3. The privates. Criticism or suggestions in regard to methods obtaining at present are advanced only with a view of offering something better in a general way and with the special object of adapting the training of the soldiers to a three-year term of enlistment.

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The nature of the arms in use at the time has invariably determined the most effective organization and employment of armies in active warfare at any given time. The laboratory and workshops of science have always been enlisted to assist in perfecting the methods of carrying on war—but more so in recent years than ever before. But the changes so forced, though due to the development of very material things, such as range and rapidity of fire-arms, etc., are much more remarkable in their effects on the spirit of armies and the nature of fighting discipline than in almost any other aspect.

In all periods of war, under all conditions of arms, the moral forces which affect armies have been the great determining factors of victory and defeat, and it has been on a nice feeling of this moral pulse of armies that the skill of great commanders has chiefly depended. In that respect there is nothing new in the modern conditions of war. But the sequence by which the development of arms has changed the moral pivot of military power in our own times must be understood or the lessons of modern fighting cannot be learned; for there has not yet occurred a modern war in which the principles of modern fighting, as they are now universally understood among the most thoughtful soldiers of all nations, have been deliberately applied to action.

It is among the first of these principles, that for success in our days careful peace practice, adapted to the actual conditions of fighting, must precede the entry on a campaign.

It has been estimated that at the end of the present century Europe will be able to put about twenty-five millions of trained soldiers in the field. Where such enormous forces are trained, it may be taken for granted that the most earnest and thorough study is given to arrive at the best methods for training the men, and we may, without detracting from our self-respect, very profitably turn our attention to a study of the methods employed by European nations.

In 1866 it was at first supposed that by the possession of the breech-loader alone Prussia had made herself the mistress of Europe. Gradually it became known that Prussia's perfect organization was at least as great a factor in the achievement of success as the breech-loader. The successes attained in 1870 led the world at large to assume that whatever had been done in the war by Prussia, was, by deliberate choice and determination of the best and most successful soldiers in Europe, shown to be the

best thing that could be done under the circumstances. The Prussian official account and other authorities have however shown that this assumption was wrong. The Prussian successes were certainly not due to the carrying out what are now regarded by the best Prussian officers themselves as the principles which ought to determine practice in future wars, but due to the possession of an organization so perfect and a training so thorough, that it could change its accustomed methods without certain risk of absolute ruin.

This year (1870) marks the death of the dense formation for attack and the birth of the extended order formation.

The latter is a child of necessity and not of choice,—it was entirely unforeseen and unexpected at the outbreak of hostilities. The army, at all events in battle, was and could be no longer a mere mechanical weapon in the hands of its commander. If this latter could not infuse into it a spirit of hearty coöperation and intelligent subordination, chaos and only chaos must ensue. The Germans had in the largest sense perfected their organization, not merely in its form, itself a matter of no small importance, but in its preparedness for battle action. Under the conditions of the past a general in command of an army relied upon its perfection in drill and in formal manœuvres for enabling him to direct it with success against the weak points of an adversary. Now this alone is not sufficient; he must depend upon the perfection of its organization and upon a training adapted to make each man ready when required to apply sound principles in every emergency, and above all, as soon as possible, voluntarily, to place himself under authority again, so as to secure unity of action. "Organization" as a means for battle action is substituted for "drill";—a living organism has taken the place of a mechanical instrument.

THE OFFICERS.

War training in time of peace is the only means of overcoming the enormous friction of the field of battle.

It must be at once admitted that the new order of things has raised to no inconsiderable extent the demands which must be made as well upon the soldier individually as upon a body of troops collectively and upon its leaders up to the very highest grade.

The most complete self-reliance on the part of the individual

soldier, the greatest power of manœuvring on the part of the troops, combined with a good military eye on the part of subordinate officers and with a thorough capacity for directing the masses on the part of those in higher command, are the qualities which in the main form the groundwork for that successful unity of action which leads to victory.

An army is what its officers make it and officers should take their profession seriously and should be single-minded in their devotion to duty. They should in fact, as well as in name, be the teachers and leaders of the men. If what I have said above is true, and I believe no one will dispute it, that an army is what its officers make it, then only the best system of obtaining officers answers the purpose, a system by which it is intended always to put the right man in the right place and having done so to see that he keeps up to the mark. Officers should retain their posts only so long as they have the bodily activity necessary for service in the field and the knowledge and capacity needed for their several particular callings.

Authority and Responsibility.—“The spirit of the Prussian army dwells in the hearts of its officers,” said Rüchel, one of those who commenced the work of army regeneration in Prussia even before the great catastrophe of Jena, and it is indeed among the officers that we must seek for it.

An officer might be censured for alluding to what he considers defects in his own branch of the service, and yet who is better able to see the shortcomings and defects therein than he? Pointing out errors and assisting in applying a remedy must be regarded as a duty.

In point of patriotism, wisdom, integrity, experience, watchfulness, zeal and devotion to duty, our corps of officers, as a whole, can proudly place itself beside that of any other nation. It remains only to open and assign a proper field where each individual in his own sphere can apply these qualities to the greatest benefit of the whole.

The present policy of centralization of power and the assumption by the War Department of the direction of military affairs to the minutest details must appear to all who have seriously reflected on it to be anything but conducive of good results.

The duties, authority and responsibility of every officer should be fixed and limited by well known bounds. Officers in com-

mand should "command" within the bounds so set them and should be responsible only to their proper superiors for their actions. Centralization has done much to obstruct the advance of army administration in the direction of vigor and effectiveness. Details, which come properly in the sphere of those directly in contact with the varying questions and immediately familiar with the needs and circumstances in particular cases, are now largely managed from Washington, and control and supervision are exercised by eyes and ears at a great distance.

Subordinates stripped of all control and responsibility grow indifferent, indecisive and uncertain and lose interest in their duties. Instead of being trained to self-reliance, force, promptitude and vigor in the performance of their duties, they become hesitating and ineffective.

In no army do we find as much delegation of authority and responsibility as in the German, and how far reaching the consequences of that delegation of responsibility are to which he owes his authority, many a German himself is hardly conscious. Delegation of responsibility is the key-note of efficiency,—centralization of authority is just as certain a product of peace time as decentralization is of war.

The armies of Frederick the Great's day were simply dead machines, no part of which could move without orders received through the proper channels. Compare with them the French Revolutionary armies afterwards wielded by the master hand of Napoleon. These armies were an exceptional product of an exceptional era, and Napoleon had the wit to utilize their good points to the utmost. The disasters of Jena forced the Germans to look into the matter and Clausewitz, Scharnhorst and others were not slow in perceiving the advantages which their enemy derived from the fact that his junior officers were always ready to act on their own responsibility according as circumstances dictated.

In most armies, after Napoleon, this was looked upon as an irregularity to be suppressed. But the Germans had been systematically training this new force and the result would have quickly attracted notice in 1866, had not the attention of lookers on been drawn off to subsidiary points, such as the breech-loader or the supposed high average of intelligence in the ranks. Taken alone both these factors would have been powerless. But it was in 1870 that the full power of this latent force was really shown,

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as exemplified by the plan on which the battles of Woerth, Spicheren, Borny and Vionville were fought. At Gravelotte they fought with their faces turned homewards, in the same position that proved so fatal to the Austrians at Marengo, and in the investment of Metz they dared to establish themselves along the circumference of a circle some forty-two miles in extent in the face of an army concentrated in the centre and able to attack at any point.

Perhaps the system did not always work perfectly, for nothing human ever does; but the net result was successful beyond expectation and in no other way could such a result have been obtained.

What reason can there be why we should not in turn set to work and develop the same force?

Delegation of responsibility is the key-note of our success in commerce, in manufactures and especially in the management of our railways; and why should not the same system adopted in the army work the same results? When once it begins to be understood among regimental officers that each in his own separate station will be held individually responsible for the fighting efficiency of his men, then emulation will be excited and better general results obtained.

It is the tenacity of power once conferred that makes the higher officers so averse to conceding anything to their subordinates and it is the feeling of being denied their proper share of responsibility that makes the younger ones either restless and inclined to kick or indifferent and inefficient.

No man will do as good work for another as he will for himself. Make a man feel that his career is really at stake on the quality of work he does, and he will stick to it like a slave.

EXAMINATION FOR PROMOTION AND THE LYCEUM.

A system of examination for promotion and a post lyceum for officers has been introduced in our army and much has been said and written for and against one or the other or both innovations. The object of both measures is to increase the efficiency of our corps of officers and promote professional study and advancement. If these objects are attained the means employed are certainly justified, provided no other and better ones exist which will achieve the same result.

The Germans do not nowadays examine their officers for pro-

motion on paper,—as many may imagine. They did once—before the battle of Jena hold such examinations; since then they have abandoned them. After a young officer has completed his course at the military school he is not required to submit to another paper examination, unless he aspires to their staff college. Their system is first to ground a man well in the general principles of war, and then to perfect him to teach others under a due sense of his own responsibility. Intelligent not pedantic uniformity is what they seek to secure; for the working of their vast armies of to-day is only rendered possible by the intelligent coöperation of every unit in it. The slightest indication of the end aimed at should be sufficient to secure its execution, not according to prescribed form but by the sensible application of the given means.

This system was not built in a day; on the contrary they have been working at it ever since 1807 and, thanks to their steady perseverance, they are now able to work with an absence of friction, to which probably no other army in the world is equal.

Compare this to our system. Practically as well as theoretically the education of our company officers is never finished or completed if successful paper examinations are a test of professional efficiency. While it is theoretically true of any profession, that an education in it is never entirely completed, there must however be a practical limit.

What shall be the criterion of an officer's professional efficiency? Is it the ability to answer satisfactorily a set of prepared questions on subjects which have been clearly defined and limited? Will this decide the fitness for promotion? A month or two of earnest application prior to a coming examination will carry any man of average attainments successfully to the goal. Then after the spasmodic exertion the reaction sets in and the officer who was really inefficient before examination will be as much so after it, and will also have obtained the higher grade. He will continue so till after a number of years a like proceeding will raise him another step.

The object of the new measure is evidently only partially attained.

But inefficient men must not be retained in the public service.

By requiring all officers to put forth their best efforts, good work and entire efficiency can be secured. Captains will know of the efficiency or otherwise of their lieutenants and command.

ers of posts and regiments can judge of the efficiency of captains by the result of their work, *i. e.*, the state of discipline and training of their commands. Nothing short of a whole-souled devotion to duty should be deemed satisfactory and inefficiency should be taken notice of at all times. The career of the officer should be made to depend on the quality of work rendered by him, and this not only on stated occasions but at all times, and no misplaced sympathy should prevent superiors from bringing inefficiency to light.

The system of examination for promotion has undoubtedly been a great agent in promoting professional efficiency and it will continue to do so. But it alone is not sufficient. It should be combined with a constant practical test of efficiency, and probably after a number of years the latter alone will be sufficient.

The post lyceum for officers has been of material benefit to the service so far and would be much more so if its scope was enlarged. The system of recitation should be discontinued. Army regulations, drill regulations, firing regulations and the guard manual we must presume officers sufficiently familiar with and such books should be left entirely out of consideration. The writing and reading of essays should be voluntary. During the six months now designated two evenings of each week should be assigned for the work. One evening to be devoted entirely to "Krieg-spiel" exercises and the other to the reading of professional papers and books and extensive discussions of same.

THE COMPANY CHIEF AND HIS LIEUTENANTS.

The captain and the lieutenants are the soul of the whole instruction and execution of infantry duty. This is certainly the case in the other arms also, but the very circumstance, that, while in the cavalry the strength of a body of troops is counted by horses and in the artillery by guns, in the infantry alone it is reckoned by men, shows at once that in the latter arm the human physical element is the only important one, and that the influence of their leader on individual men has greater prominence in the infantry. This influence, this guidance of individual minds, is exercised by the captain and his lieutenants, that is to say, by the company officers. The higher ranks are too far separated from the men and, owing to the great number of individuals under them, cannot possibly know the peculiarities of each.

One of the chief props of the army edifice, built up of obedi-

ence and confidence, is the company chief. On him falls the chief labor of training and instructing the soldier. In constant communication with one another, the men come to know him thoroughly and he learns to know them. He instructs them, praises or blames them, rewards or punishes them.

In the company the captain ought to be supreme. In his hands lies in peace the training and in war the leading of the company and he should be solely responsible for its efficiency and discipline. He is aware what is required of him. He also knows in what particulars the standard which he has set himself has not been reached, and who then is more capable than he to decide how and by what means the object shall and can be accomplished?

The methods of instruction, the distribution of time and the order to be followed in the process of training are matters which he, as best qualified therefore, ought to be allowed to settle according to his own judgment.

His superiors should be concerned with the results only, of which they can satisfy themselves at the end of the period assigned for company training. If any of the soldiers have not been properly instructed or if the company is not fit to take its place in the battalion that is then the captain's fault and such measures as are thought necessary can then be resorted to by the proper superiors.

The battalion commander should receive his trained companies and practice them in battalion manœuvres. Every commander above the rank of captain deals with a body composed of units with the interior affairs of none of which should he meddle except in cases of failure on the part of the officer directly responsible.

THE NON-COMMISSIONED OFFICERS.

If the staff of an army can be justly called its "brain" the non-commissioned officers may as appropriately be called its "backbone."

The Major General commanding the army in his annual report of 1892 remarks in regard to the non-commissioned officers: "Modern advances in the art and science of war require a much higher education not only of officers but of all ranks in the army. It is now becoming impracticable to retain in the service men of the character and intelligence required for efficient non-commissioned officers, such men can obtain much higher remuneration

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in civil pursuits. While comparatively short service of private soldiers is not seriously injurious, comparatively long service of non-commissioned officers is essential to the discipline and efficiency of an army little less than in the case of commissioned officers. I therefore urge a considerable increase in the pay of all non-commissioned officers in the line of the army."

Long Service and Pay of Non-commissioned Officers.—It is a curious but indisputable fact, that the non-commissioned officer is at this moment the weakest link in the military chain in all the great continental armies. The very rapidity with which the military machine receives the raw material in the shape of recruits at one end and throws it out at the other as trained soldiers militates against the production of a first-class non-commissioned officer.

A German pamphlet on the training of recruits informs us that "German regimental officers state, that want of experience on the part of their non-commissioned officers increases the difficulty of training their men to an enormous extent."

In these days when "moral suasion" has to a very great extent superseded the employment of mere force, the duties of the non-commissioned officers require for their due fulfillment men of infinitely superior attainments and of a higher moral worth than formerly.

The importance of the non-commissioned officers depends upon the influence which their position, experience and matured character insures them over the privates. The required tact and judgment age and experience alone can give.

Now more than ever will success depend upon the training of subordinates; every link must be perfect in that chain of authority which the extended formations of to-day will strain to its greatest tension on the field of battle.

There is no link of more importance than that formed by the non-commissioned officer. A short period of service may and does suffice for making an efficient private, but it cannot produce a really efficient and intelligent non-commissioned officer. This difficulty has long been apparent in the European military establishments, and as the obligatory period of service has been gradually diminished so are inducements offered to non commissioned officers to remain, increased.

These inducements are as a rule:

1st. A sum of money down on reënlistment.

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- 2d. Increasing sums at various periods during reënlistment.
- 3d. Increased and increasing rates of daily pay during reënlistment.
- 4th. A sum down on the completion of the period of reënlistment.
- 5th. Employment in civil life suitable to their attainments when the periods of reënlistment are over and when, by reason of age, their places can with advantage be taken by younger men.

How can we best obtain a class of experienced and efficient non-commissioned officers? The following suggestions are advanced: The length of the first term of enlistment should be the same as that of the privates, namely, three years. Pay during the first enlistment: 1st sergeants, \$35.00; sergeants, \$25.00; corporals, \$20.00. The period of each subsequent enlistment to be six years. Non-commissioned officers to receive \$50.00 at time of first reënlistment and \$50.00 at expiration of first reënlistment. In addition to this \$1.00 per month increase of pay for first three years of first reënlistment and \$2.00 per month for second three years of same reënlistment.

On second reënlistment to receive \$50.00 at once and \$100.00 at end of term of enlistment. Also an increase of monthly pay of \$3.00 for the first three years and \$4.00 for the second three years.

Promotion of N. C. O. to the Grade of 2d Lieutenant.—Promotion of enlisted men to the grade of 2d lieutenant should be confined entirely to the non-commissioned officers and this for several reasons.

(a) To reward for efficiency and faithful service a class of deserving men. With a 3 battalion organization for the three arms of the service we would have more than 4000 non-commissioned officers in the white regiments. The number of non-commissioned officers commissioned yearly for the past 7 years has been in 1886, 7; 1887, 10; 1888, 11; 1889, 3; 1890, 5; 1891, 11; 1892, 10. A total of 57 in 7 years or an average of 8 $\frac{1}{4}$ per year, which is about .236 per cent. of the number of non-commissioned officers given above. These figures speak for themselves and no comments are necessary. A very small portion only of the non-commissioned officers could be rewarded by such promotion.

(b) As a means of obtaining the best material for the service. It may here be claimed that the present law establishing compet-

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itive examination among the entire enlisted force will completely attain this object. I maintain this is not so, at least in no greater degree than before. It seems that certain individuals who desire to obtain a commission cheaply are more benefited by the law than the service in general.

The few vacancies in the grade of 2d lieutenants which can be filled yearly by promotion from the ranks could certainly be creditably filled from the non-commissioned officers if only efforts would be made to offer better inducements to good men. Only efficient non-commissioned officers of at least two years' service as such should be eligible for promotion. The non-commissioned officers having been selected from the best privates for special aptitude and qualification, and only non-commissioned officers of superior qualifications being recommended for promotion, it must necessarily follow that the best material in the service will be obtained. It is impracticable, impolitic and I may say, impossible to carry out the new law in its sweeping character without injury to the service. There can be no doubt that there are a great number of men in the ranks and more at large in civil life who after two years' service could pass a successful examination, but it is at least questionable and worthy of serious consideration whether the country at large, and the service in particular, will be benefited by the new method of procedure.

(c) As a means of raising the position of the non commissioned officers in their own eyes and particularly in the eyes of the privates. Instead of raising their position and standing the new law tends to bring them still more on a level with the privates.

The conditions for eligibility for promotion should be: a two years' service as a non-commissioned officer; recommendation by the company commander, then recommendation by a board of five regimental officers who make a preliminary examination and a final successful competitive examination by a board of officers convened by the War Department.

The Training of the Non-commissioned Officers.—Officers might recollect much more frequently than is the case at present, the immense importance of according due support to their non commissioned officers in the difficulties which are so greatly increased by the change of the character of the present day administration of discipline.

The distance which separates the non-commissioned officers from the privates should more nearly approach that which separates

the non-commissioned officers from the officers (none other than a distinction in rank being attempted). Separate rooms in the barracks should be provided for the non-commissioned officers and they should mess separately from the privates.

The selection of the non-commissioned officer lies of course entirely in the hands of the captain of the company, who is responsible for the efficiency of his command. As a rule a man should have served at least two years as a private before being appointed to the lowest grade of N. C. O.

A system of theoretical and practical training of non-commissioned officers should be adopted and carried out. The following course of training is suggested;

(1st) A course of theoretical instruction in the company under the direction of the captain assisted by his lieutenants. This to comprise the study of

- (a) Drill regulations.
- (b) Extracts of army regulations.
- (c) Small arms firing regulations.
- (d) Interior administration of company.

(2d) A post course of theoretical and practical instruction, to comprise

- (a) Garrison service and guard duty.
- (b) Field duties; outposts, advanced and rear guards, marching, bivouacking and quartering of troops, patrol and reconnaissance duty, escorts, reports and orders.
- (c) Field fortifications.
- (d) Military signalling.
- (e) Military topography and sketching.

This school or "post lyceum for non-commissioned officers" should be in charge of one or more officers selected for their special qualification and for the interest they take in the training of the non-commissioned officers.

(3d) A course at a school of application for non-commissioned officers. Such a school should be established for each branch of the service, that for the infantry might very properly be located at Fort Leavenworth, Kansas, by reason of central location and the circumstance that the facilities for a successful operation of a school of this character are probably better at that post than at any other.

- (a) Detail of N. C. O. for instruction :

Four companies of each regiment to be represented at the

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school at one time, one non-commissioned officer from each company, making 100 non-commissioned officers (referring only to the infantry branch of the service). The companies to be designated by the regimental commander and names of N. C. O. for detail to be submitted by the company commanders. The selection of the N. C. O. to be based on special qualification and aptitude.

(b) Length of course of instruction :

The course to last six months for each class, beginning on January 1st and July 1st for each year to insure for each class favorable weather for outdoor work.

(c) Instructors : As many lieutenants from the line as may be necessary, selected for special fitness, to be detailed in orders from the War Department.

(d) Administration of the school : The school to be separate from the post and under the immediate command of a captain or a junior field officer.

(e) Scope of instruction : To be both theoretical and practical and to comprise :

(aa) Field duties and elementary tactics (as enumerated under post course 2b).

(bb) Field fortification.

(cc) Military topography and sketching.

(dd) A course of musketry instruction.

(f) Proficiency certificates.

N. C. O. found proficient in the various departments of instruction to receive a certificate setting forth this fact, signed by the commandant and the instructors.

With such a system of selection, training and instruction of non-commissioned officers the efficiency of this very important class of men would soon be all that can be desired.

By limiting the length of service of non-commissioned officers to fifteen years and providing suitable employment for them after honorable discharge we secure at once qualified and experienced non-commissioned officers and a body of men for the public service whose character and previous training make them second to none.

THE PRIVATES OF THE COMPANY.

With the one short term of enlistment and the high state of efficiency required of the armies of the present day, earnest and

faithful work will be necessary on the part of those on whom the work of training the men devolves. Instruction and training should be confined to what is absolutely essential, but that should be done well. I will consider this portion of the subject under two heads, namely : "General remarks" and "Military training proper."

GENERAL REMARKS.

1. The education of the soldier.

Much has been said and written in regard to the post school for enlisted men and the general opinion seems to be in favor of the institution.

Prior to 1866 there was no law or general regulation for the education of our enlisted men, nor was anything more required than "a competent knowledge of the English language." The Act of July 28, 1866, reorganizing the army at the close of the rebellion was the first to provide for the education of the enlisted men. The action of the War Department is shown in G. O. No. 80, September 24, 1866, which authorized the erection of buildings at posts where no suitable rooms could be found. In 1878 a Board of Officers (consisting of Adjutant General Townsend, Quartermaster General Meigs and J. A. General Dunn) made a report on the subject to Secretary of War McCrary, which was published in G. O. No. 24, May 18, 1878. Compulsory education was considered inadvisable for several reasons, among which I may mention insufficient annual appropriations, disinclination of the men to be compelled to attend school and the fact that movements of troops would often absolutely prevent any regular system of schools during such movements.

In 1886 the Adjutant General of the army says in his annual report of the system then in vogue : "It is a failure and from inherent radical defects will remain so. Those of the men who are the most ignorant, and therefore in the greatest need of instruction, are the most averse to attend school."

To remove the inherent radical defect the Adjutant General says that "the attendance of this class of men should be made compulsory," and that instruction must be made a military duty. General Baird, Inspector General of the army, says in his annual report of the same year : "Some officers have recommended that attendance at school of enlisted men be made compulsory. I am entirely opposed to anything of the kind. In the first place,

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knowledge cannot be crammed into a man against his will, and in the next I doubt the legal right of the Government to compel mature men to attend school like children. If the enlisted men of the army do not come up to a desired standard of mental attainments, the remedy should be found in the recruiting office in the same way that the standard of physical fitness is kept up."

Section 1231, Revised Statutes, makes the attendance at school of certain enlisted men a military duty.

There is much to be said on both sides of this question.

In Germany the education of enlisted men is, in part at least, compulsory, and in some degree also in England. The principle of proving by a satisfactory examination that applicants are sufficiently educated is applied by the Government in getting its commissioned officers, whether they be from the ranks, from civil life or through the Military Academy. Should not the same principle apply in receiving the enlisted men? The engagement between the recruit and the Government is voluntary. If the Government forced men into its army it might be under obligation to remove their elementary deficiencies. We take only men that want to join and fix our standard of admission.

It is true that an army composed of men of superior intelligence is at all times superior to an army of equal numbers and training but inferior intelligence, and intelligent action on the part of the individuals composing the army has never been as important a factor in warfare as at the present day.

With an efficient system of recruiting our soldiers will not require the instruction at present given at the post schools. Undoubtedly it is our duty to improve by training every man who comes into the ranks, but whatever form of education we adopt, its first object should be to improve the man's value as a soldier. In the Annual Report for 1892 of the Major General commanding the army, we find under the head of "Military Education" these words: "The post schools for enlisted men alone have failed so far to reach the high standard to be desired. This is solely due to the lack of necessary legislation to provide for the compensation of competent teachers."

We should leave the manufacturing of scholars to schools, colleges and other educational institutions and confine ourselves to the manufacturing of soldiers. We have no time to teach anything not intimately connected with the profession. To be able to return to civil life about 7000 men yearly and receive this

number of untrained men to fill the places so made vacant, every hour of a three-year enlistment must be utilized to the greatest possible advantage. What good would it do a man to know the names of all the navigable rivers in the world or the names of all the Presidents, if unable to take proper care of himself in the field, deficient in endurance and marching power, unable to use his weapon to the best advantage or unable to jump a ditch when his life depended on his doing so?

Whatever may have been the necessity for a post school for enlisted men, with our system of voluntary enlistment there seems to be no necessity to continue this instruction. In place of it I would suggest a system of theoretical instruction of a professional nature, which I will broadly outline under the head of "theoretical instruction."

(To be continued.)

OUR ARTILLERY IN THE MEXICAN WAR.

BY FIRST LIEUT. G. W. VAN DEUSEN, 1ST U. S. ARTILLERY.

IT followed as a result of the Franco-Prussian War of 1870 that the principle was advanced by artillerists that well-served artillery could not be taken by direct frontal attack, and should be able to defend itself against such attack without the aid of any infantry support whatever, such support being necessary only for defense from enemies attacking on the flanks and in rear. This increase in efficiency may be ascribed to the greater rapidity of fire of breech-loading guns, their increased accuracy, and the improvement in the construction of shrapnel, by which the ground can be completely swept by this class of projectile at comparatively long ranges.

But, to a person who has carefully followed the history of our war with Mexico in 1846-47, it would seem as if this principle might, practically, have been deduced from the results obtained by the United States artillery during that conflict. The parity between the arms of attack and defense is preserved, both then being muzzle-loading, as now both are breech-loading; and the results accomplished by some of our field batteries at that time were not surpassed by the most noted achievements of any of the artillery during the war of 1870. At times, especially during

Taylor's campaigns, the artillery seemed almost invincible, and, by its practically unaided efforts, turned the tide of battle, and gained the day for our troops.

This war of 1846-47 is one about which little is known, even among military students of the present generation. There are many reasons for this, the principal one being, doubtless, that it involved the movement of comparatively small bodies of troops, and, therefore, has been completely overshadowed by the magnitude of our own Civil War, and, later, by the conflict in Europe between the two greatest trained armies of the world. Then, again, the war was fought in a foreign country, so to speak, communication being extremely slow and difficult, and the enterprise of the war correspondent in those days not being so great as at the present time. The nation itself was much divided as to the propriety and advisability of the war, and a large proportion of the people took little interest in a conflict occurring so far from home, and of the direct effects of which they saw and heard so little. Of course there was a large amount of enthusiasm over our victories, but this was moderated by the poor opinion held by the majority of our people as to the fighting qualities of the Mexican soldier, an opinion not always justified by the facts. The Mexican soldier often proved that, when properly led and used, he could fight as well as the best; and had he been efficiently officered, the march of the American army through Mexico would probably have been a totally different operation. But with such a chaotic state of government, there could be little stability in the army itself. With every change of the government, there was a corresponding change in the chief officers of the army, and these officers were constantly using their positions and the assistance of their men in order to plot the downfall of the government and their own accession to power, and the head of affairs. As a natural consequence when any general would show any considerable amount of talent and a desire to make some improvement in the army it was considered by the *de facto* government as a cause for suspicion, and, as a general thing, led to the relief of the suspected officer if not to his imprisonment or banishment, unless he took time by the forelock, and overthrew the government before it could overthrow him. Under such conditions as these, it cannot be a cause for wonder that the morale and discipline of the army at large should be at a very low ebb, and that, however good individual fighters the men might

be, there was a lack of that cohesion necessary to carry an army forward to victory, especially when opposed to such a force of men as was our army at that date. That some of the Mexicans could fight was often found by our men to their great cost, especially in some of the conflicts near the City of Mexico. But, physically and morally inferior, and without discipline, no amount of personal bravery could enable them to stand against an army like ours, which, though small, was in a high state of efficiency. The arduous frontier service to which it was constantly subjected had given both officers and men the training most needed for such a conflict as this, where they were often required to attack and meet the attack of largely superior bodies of poorly disciplined forces.

The difference in the two armies was in no way better shown than in the rapidity with which the Mexican army suffered almost complete disintegration in a conflict after meeting with a single serious reverse, though fighting bravely up to that point. At Cerro Gordo, Contreras, Resaca de la Palma, the battle ended in a stampede once the Americans had gained the advantage. The results of the first conflicts of the war had given our regular troops such confidence in themselves and their officers that they were practically invincible against anything like reasonable numerical odds. It was this confidence together with the high state of discipline, that enabled General Scott to make so successfully that march into the heart of the enemy's country which was considered so suicidal by the highest military authorities abroad. It was a bold move, to say the least, and the American people may well feel proud of the men who made it possible.

At the opening of the Mexican War in 1846, the artillery of the American army consisted of four regiments of ten companies each, one of which, in each regiment, was supposed to be equipped as light artillery. The four original batteries were "K" of the First, "A" of the Second, "C" of the Third, and "B" of the Fourth—commanded by Taylor, Duncan, Ringgold and Washington respectively. In March, 1847, two companies were added to each regiment, and the President was authorized to equip four additional batteries, one from each regiment, as light artillery. On June 16, 1847, General Scott at Puebla announced as the four additional batteries—"I" of the First, Magruder; "M" of the Second, Roland; "E" of the Third, Sherman, which had practically been a field battery for about a year;

and "G" of the Fourth, Drum. Of these "M" of the Second was not organized in time to render any services during the war. The foot batteries of the artillery regiments were armed and equipped as infantry and rendered most efficient service as such during the entire war.

Of the original light batteries, Ringgold's was the first formed in 1838, and it was the only one equipped as horse artillery. It served as such through the Mexican War and until it was dismounted at Santa Fé after the war. Of the remaining three batteries "A" of the Second received its armament at the Camp of Instruction at Camp Washington in 1839; "B" of the Fourth after the breaking up of this camp; and "K" of the First at Plattsburg Barracks, N. Y., soon after. The commanders of these batteries had been selected on account of their peculiar fitness for the duty, and had devoted themselves, from the time of their details, to bringing their commands into a high state of discipline and efficiency. Their fitness for this particular duty was proven by the behavior of the batteries when brought into action.

"E" Third Artillery, at first under the command of Lieut. Bragg, actually served as a light battery from the beginning of the war, though not officially made so until 1847. Before joining General Taylor, it was equipped with two guns and two howitzers and the necessary animals, and, so equipped, served with Taylor through the campaign in Northern Mexico.

In creating the original light batteries, it was intended that they should be armed with six guns, but, owing to the reduction in the number of men per battery, it was possible to man only four, and the two others were stowed away. The batteries engaged in the opening battles of the war had only four guns each, but in a short time the number of men per battery was increased so that, in some cases, six guns could be manned. These guns were mostly bronze six-pounders, the recognized gun at that time for the light batteries. Besides this gun, the system for field service included the twelve-pounder gun, twelve, twenty-four, and thirty-two pounder howitzers and twelve-pounder mountain howitzer, all of bronze. Later in the war, some of the twelve-pounders were given to the newly formed light batteries, and one or two had a howitzer thrown in to complete the miscellaneous character of the armament.

The first of the batteries to really come under fire was Bragg's. When General Taylor marched to the relief of Point Isabel, this

battery, not being entirely fitted for field service, was left as part of the garrison of the works opposite Matamoras, and as such took an active part in replying to the bombardment of those works, though, unfortunately, the guns were too light to inflict much damage upon the enemy.

With Taylor's army went Ringgold's and Duncan's light batteries and two eighteen-pounders under Lieut. Churchill. At Palo Alto there were also some twelve-pounders along, but as they were dismounted and carried in wagons, they naturally were not of any very great use. Returning from Point Isabel, the first battle of the war was fought, and this first battle was won almost entirely by the artillery. Ringgold on the right, Duncan on the left and Churchill in the centre met the enemy and drove him from the field with very little assistance from the foot troops, showing, as had never been better shown before, what could be accomplished by well trained and well served batteries against masses of the enemy. And whatever faults the Mexicans may have committed cannot take away the credit of our victory, as in every battle one side or the other errs, and the Mexican troops were no raw levies, but the flower of the regular army, commanded by experienced generals. It was a battle of regulars against regulars, and was won by the superiority of our artillery in rapidity of fire and motion.

This first battle gave the army a confidence in its light artillery which was never shaken or betrayed, but which was only increased by the progress of the war. But Palo Alto inflicted a great loss on the American army in the death of Ringgold, who had for years devoted himself to his battery, and, than whom, probably, no better light artillery commander ever existed. He was permitted to live long enough to know that his efforts were not in vain and that his battery in its first baptism of fire in this war reflected the utmost credit upon his training.

On the following day, at Resaca de la Palma, the ground was such that the artillery could not be of much service. Nevertheless Ringgold's—now Ridgeley's—battery was thrown to the extreme front of the skirmish line and did good service especially in drawing the fire of the enemy's battery preparatory to May's charge. General Taylor was not one who believed in keeping his guns in the background, as did many in those days, but threw them well to the front on all possible occasions.

During the march into the interior of Mexico, the artillery

did not have much chance to distinguish itself as such. In the reduction of Monterey it did whatever was required of it well, but its opportunities were few, as the fighting was mostly of a street character and the field guns were of too light a calibre to be used with advantage against the fortifications and solid buildings of the city. The foot battalion did excellent service.

After the capture of Monterey, the celebrated battery of Ringgold had still another change of commanders. Ridgeley, who had succeeded to the command and who was a worthy successor, was killed by his horse stumbling in the streets of Monterey, and Bragg was his successor and retained command of the battery through the war, his original command, "E," having before this time been taken by its captain, Sherman.

We now come to the battle which may, without exaggeration, be called the most important of the entire war, both for the artillery and for the country at large, Buena Vista, or, better, La Angostura, the battle being fought at the pass bearing that name. General Scott had commenced his campaign and had drawn from General Taylor the flower of his army. He had taken all the regular infantry, the foot battalion of artillery and the pick of the volunteers. Taylor was left with a total force of only about 7500 men, and, deducting those required to guard communications, garrison towns and other necessary detachments, he could bring into the field less than 5000 men of all arms. Of these, the only regular troops were three companies of dragoons and three batteries of light artillery, Washington's, Sherman's and Bragg's, Webster's battery of the First was in a redoubt at Saltillo, armed with howitzers and defending the rear of the army.

When General Scott withdrew from Taylor the flower of his army and laid siege to Vera Cruz, it was his theory that the Mexican army would at once hasten to the defense of that place and the road to the capital, and that nothing would be left for Taylor to accomplish except the defense of the line he had occupied against small bodies of cavalry and rancheros. For this purpose, the force left him was amply sufficient. Unfortunately for this theory, the dispatches to Taylor disclosing Scott's plans had fallen into the hands of General Santa Ana, who had succeeded to the command of the Mexican forces, and who decided upon a totally different course from that mapped out for him by Scott. Gathering together an army of about twenty thousand of the best of

the Mexican troops, he concentrated them at San Luis Potosi and resolved to march against Taylor, defeat him, and, by carrying the war beyond the Rio Grande, compel Scott to raise the siege of Vera Cruz and march against him. Under these circumstances, it can be seen what a responsibility rested upon General Taylor and the little army under his command. This once defeated, there was nothing to prevent the victorious army from crossing the Rio Grande and carrying the war into the recently annexed state of Texas, and, possibly, even to New Orleans. This would have postponed the march of the American army against the City of Mexico for at least another year, on account of the near approach of the sickly season, when no siege operations could be carried on near the sea coast. The means at General Taylor's disposal must have seemed woefully inadequate, in spite of the confidence felt by our men in their superiority over the Mexicans. Most of our volunteers had never been under fire, and there was a numerical superiority of four to one against them. It was fortunate indeed for the American army that those three light batteries had been retained, as they now formed the backbone of the army. Without them the battle would undoubtedly have had a totally different ending, such being generally conceded by soldiers of all arms.

The battle-field of La Angostura was not one especially fitted for light artillery, being a narrow pass, with a plateau on the left which was cut up by several ravines, yet never was artillery better fought, and never did it contribute more to the success of the day. A portion of Washington's battery was stationed in the pass behind a slight epaulement, and held this position during the entire battle, dispersing by its unaided efforts one main column of attack, 4000 in number, under General Moray Villamil, and, later, scattering the cloud of lancers who were slaughtering the defeated Kentucky and Illinois troops penned in one of the ravines, allowing the fugitive remnants of these regiments to gain the shelter of our guns. On our left, where the main attack was made, Bragg's, Sherman's, and three of Washington's guns, under O'Brien, fought through the second day of the battle. Early in the day, O'Brien, left entirely unsupported by the flight of the Second Indiana Regiment, fought his guns until almost surrounded by the enemy and then withdrew, leaving one of his pieces, a four pounder, in the hands of the enemy, as every horse was disabled and not a cannoneer unwounded. His resistance helped to delay

the enemy till the Mississippi Rifles could come into action, and check the advance of the enemy.

But it was in the last great effort of the battle that was shown the ability of our artillery to save the day. Santa Ana had brought forward all his reserves and formed a grand column of attack of ten thousand men, directed against our left wing. We had no reserves, and, in the then exhausted condition of our men, had the enemy succeeded in throwing back the left wing, the American army would undoubtedly have been crushed between the two bodies of the enemy. As before, O'Brien, with two guns was well in advance, and his support abandoned him. If he remained, he would undoubtedly lose his guns, but might delay the advance till Bragg and Sherman, who were hurrying up at the full speed of their tired horses, could get within striking distance. He elected to remain, and, with his few remaining gunners, fought his pieces till the enemy was at their muzzles, then made his escape to the rear with every man wounded. But by this time Bragg, also unsupported, had come into action, and was repeating the lesson given at Palo Alto by the same battery, only this time on a much grander scale. He was soon supported by Sherman, and these two batteries checked the onward course of the enemy, and held him in check until the arrival of the supporting troops then hastening up, when the Mexicans withdrew to their original position in rear of their batteries.

This practically ended the battle, and the next morning Santa Ana had retreated to San Luis, which he reached with about a third of his army, leaving the American army masters of the field of battle.

During the battle the rear guard had not been idle. One of Webster's howitzers under Lieut. Donaldson and a field piece under Lieut. Shover had checked the advance of Miñon's cavalry force, which was waiting to cut off the retreat of the American troops, caused this force to retreat, and pursued it some distance, this being done with little or no support.

It will be difficult to find in history any instance in which more depended on the artillery than in this same battle, and where it more completely carried out what was required of it. The opposing army was not made up of raw recruits, but of the best troops of the Mexican army, serving under a commander in whom they had the highest confidence. Yet they could not stand before the unsupported fire of those two batteries, the bat-

tle being practically won and the enemy ready to retreat before the infantry supports came up. And it must not be forgotten that this victory was made possible by O'Brien, who, scorning the time honored tradition that it was a dishonor to lose guns on the field of battle, fought his till the enemy was at their muzzles and fell back just in time to save himself from capture, or rather death, as the enemy was giving no quarter. Surely after the lessons of this battle, it might be inferred that artillery was very nearly able to take care of itself.

During the advance of General Scott into the interior of Mexico, the field artillery did not have so much chance as in the Northern campaign. The battles were nearly all of an offensive character and directed against works too heavy to be attacked by anything so light as our field guns. Vera Cruz was taken by regular siege in which ordnance, artillery and the navy all had a share. At Cerro Gordo the only service rendered by the light artillery was a negative one, when Duncan's battery in the advance became entangled in the rocks and delayed the column. During the march to the City of Mexico, the light batteries were very useful in repelling the Mexican cavalry, which seemed to be in wholesome terror of our grape and canister. No matter how imposing the force of lancers making the demonstration, all that was necessary was to throw a battery, or even a section to the front, and a few rounds would find the enemy in full retreat. The lessons of Palo Alto and Buena Vista had produced a deep impression upon the minds of the Mexican horsemen.

During the battles around the City of Mexico, the field artillery was freely used and acquitted itself well, though it could not produce the same decisive results as on an open field. At Churubusco, Taylor's battery gave an example of the value of discipline, when, through an error of judgment, his battery was ordered to take a position in front of the Convent where it was exposed to a galling fire without being able to accomplish anything adequate in return, his men serving the guns as if on drill for nearly two hours, though severely cut up, and only being withdrawn when the Convent was stormed.

At Molino del Rey, Drum's guns on the right supported the attack on the mill, being moved by hand, as the horses were soon disabled, and, later, repelled an attempt of the Mexicans to retake the work. On the left, Duncan formed a rallying point for those retreating from the first assault on the Casa Mata, repelled, un-

aided, a threatened flank attack by a large body of horse, and later, by his well directed fire, caused the enemy to abandon the strong position of the Casa Mata. This was surely a fair day's record for field artillery against a fortified position.

At the storming of Chapultepec, the work was necessarily mostly done by foot troops. Some of the light artillerymen were used in the siege batteries. While the assault was in progress, Lieut. T. J. Jackson with a section of Magruder's battery had a sharp engagement with a supporting force of the enemy on the north side. All of his horses were disabled but he held his position till the Castle was carried. During the pursuit of the enemy to the City, detached pieces of the batteries were pushed well to the front. Captain Drum was with the advance of Quitman's column, moving his pieces by hand, as horses could not be used. The infantry found shelter during this advance under the arches of the aqueduct, but the artillery could not use this shelter and was constantly under fire. Nevertheless the pieces were well served, and cleared the way for the advance of the infantry. Capt. Drum and Lieut. Benjamin were both shot down at the Belen gate. With Worth's column, Duncan's battery was with the advance, and Lieut. Hunt especially distinguished himself.

These few instances have been given to show that the field artillery did well what it was possible for it to do. But, as has been before said, its opportunities in this campaign were practically "nil" as compared with those of Northern Mexico. Here the Mexicans were defending their capital from attack, chiefly by means of strongly fortified positions, they acted on the defensive in all instances, and consequently the operations of our forces were directed to the reduction of these places. This was generally done by assault, as time and means were both lacking for regular siege operations. In these assaults the artillery serving as infantry did its full share, but the guns could only assist from a distance. But, taken as a whole, it may be doubted if history will show any war in which field artillery played a more conspicuous part or did more to assist in bringing about a successful conclusion. Splendidly disciplined, at the beginning its successes and conduct did much toward improving the morale of the whole army, regulars as well as volunteers, and led commanders to rely upon it as the backbone of the army, a reputation which it never belied during the progress of the war, even under the most trying circumstances.

A TECHNICAL CRITICISM OF OUR INFANTRY DRILL BOOK.

BY FIRST LIEUT. E. C. BROOKS, 6TH U. S. CAVALRY.

THE ideal drill book for any branch of the military service in the United States is the one best adapted to volunteers, the organized militia and the regular army. It should be easily understood by a person not conversant with drill book language and the commands should convey to the mind with as little memorizing as possible the movements intended. Commands on the battle-field should conform as nearly as possible to those heard by the soldier in his daily routine and close order drills in order that he may obey them from second nature, and in order that he who is to give them may not be at a loss for the proper ones at a critical time. The drill should be adapted to both large and small companies. It should not be forgotten that this country will always place its main reliance on a volunteer force in times of national danger, and the book should be adapted more to those needing instruction than to those who have but to look at it occasionally to refresh the memory or settle a doubtful point. The arrangement of the subject matter should be progressive and approach, as nearly as may be, the course to be followed in instructing a newly organized company or battalion. The different lengths of steps prescribed should be as few as practicable, in order that they may be easily acquired. The different elementary motions of the manual of arms should be easy and such as would naturally require the same length of time in their execution; it is a serious mistake to prescribe one or two very difficult ones requiring much time to be spent on them before an organization can make a creditable showing. A commander of troops should be hampered as little as may be by the formalities of drill—a subsequent movement should depend as little as possible on what the preceding one was.

With the above as premises, some, though by no means all, of the imperfections of the present infantry drill book will be pointed out, together with suggested corrections or improvements.

The numbers refer to the paragraphs as numbered in the book.

The enlarged and ambiguous meaning of the word "echelon" should be discontinued and it should be confined to meaning the formation in which subdivisions are on different but parallel lines and unmasking one another. There seems to be no advantage gained in confounding the names of the three lines in battle formation with the formation known generally as "echelon." Besides, these lines have separate names already without also calling them echelons.

Although it is required that infantry shall "habitually" be formed in double rank, yet, for exceptional cases there ought to be a means prescribed of forming a single from a double rank and the reverse. Provision has been made in paragraph 105 for stacking arms in single rank, but no provision made by which the troops may take this formation or move in it.

"SCHOOL OF THE SOLDIER."

17. A method of stopping movements improperly commenced and halting the men in their places should be prescribed. In battalion drill it sometimes happens that the command is misunderstood by part of the companies, and it is necessary to halt them all in their places. That employed in the cavalry drill is a good one,—"In place, *halt*." After having explained the movement to resume the march, "Squad, *march*."

22. It should be stated whether or not the men fall in at attention.

26. What there is of value in this paragraph should be put under paragraph 121. The command "*eyes, right*," is of little use.

29. The salute is too nearly like a street urchin's method of telling you to go—somewhere else—by putting his thumb to his nose with his hand open. Unless one is careful to avoid it the thumb comes too dangerously near the nose to be a sign of respect or official salutation. The old salute is better.

30. In the 13th line, where it is prescribed that the recruits be placed *three* paces apart it should be *two*, to agree with paragraph 152. The hand exercise (fifth exercise) is of too little value to occupy space in a drill book; also the foot exercise (seventeenth exercise).

32. Nearly half a page is taken up in explaining those principles of walking that most people have learned in the second year of their infancy. Those who have not are rarely ever enlisted. The same may be said of paragraph 35.

37. The "short step" should be designated the "half step." To resume the full step in this, as well as in all cases, as after "turning," for instance, a better command would be "full step, march." The command "forward" should be confined to indicating *direction* only.

42 and 43. These paragraphs are of little use. The principle of selecting two points in one's line of march to guide him is of value to guides acting as such but of none to recruits.

49. The third paragraph applies only to "present arms," and it should not be given the importance of a general rule.

51. The first motion from "order" to "carry" is exceedingly difficult for recruits to acquire in the cadence prescribed. In the regular army and at West Point the writer has seen but one company (Company I, 12th Infantry, now skeletonized) that executed this motion correctly in the cadence prescribed. However, since the new rifle hardly admits of a "carry" this may have to be discarded. It is of no use except as an intermediate step to "present."

58. The first motion from "port" to "right shoulder" is too difficult for a whole company to acquire perfectly in a reasonable amount of time. It should be divided into two motions.

61. To agree with paragraph 46, the commands should be "Port arms, Open chamber, Close chamber. Dismissed." Paragraph 83 should precede this.

64. "Fix bayonet" should be allowed from "port" as well as "unfix bayonet."

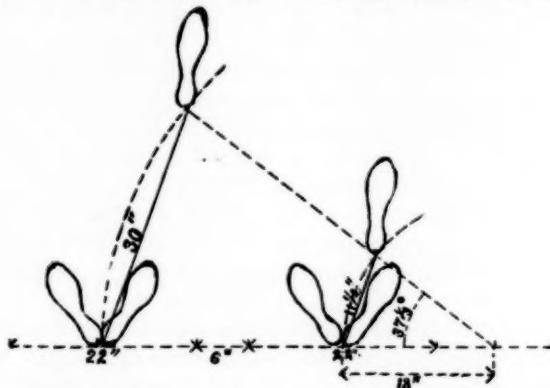
86. After this, should follow the commands and explanations for "cease firing." But we are left with the impression that it is always a military necessity to load after firing and before the rifle may be brought to "order." We are not taught how to stop the firing with empty rifles until several subjects not in the manual of arms are treated of, in fact, not until *seventeen pages* are passed and we come to paragraph 147.

115. The corporal should be number 2 of the front rank and should always be the guide of the squad. There is in extended order nothing more confusing to recruits than the duties of number 2 (front rank), the corporal and the guide.

122. The left hand should be placed on the hip in *all* alignments, and not by inference confine this to the "School of the Soldier." Nothing short of constant measurement of this interval will maintain it and the dependent distances in column of fours or twos.

131. The preparatory command is *not* preparatory on account of there being another command that has the same "preparatory" command—"right *dress*." It would be an improvement to reverse one of these.

133. There should be provision for counter-marching a column without having to give two commands for changing direction to accomplish it. This paragraph prescribes the radius to be taken in column of twos, but does not prescribe the number of steps necessary to make the wheel nor the length of the steps of the pivot man. It may seem trivial to deal scientifically with so unimportant a matter as the changing of direction of a column of twos, but since the same principles are applied further along in this article, they may as well be used here and also to show the reasons for the assertions. By examining the accompanying figure



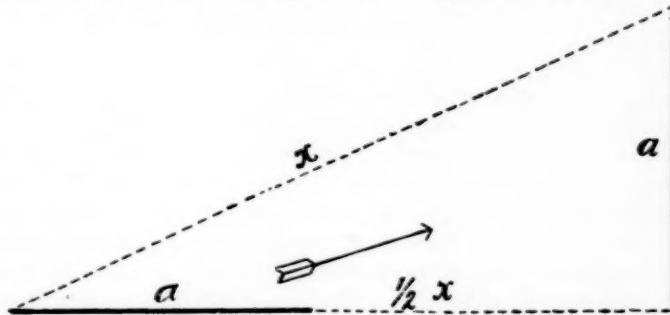
and applying the equation, $\text{chord} = 2 \times \text{radius} \times \sin \frac{1}{2}$ subtended angle, it will be seen that the wheel will be completed in $2\frac{1}{2}$ steps and the pivot man will have to take steps of $11\frac{1}{2}$ inches if he wheels accurately. If, however, we impose the conditions that the pivot man's steps during the wheel shall be the half-step (15 inches) this fixes the radius at 28 inches and causes the wheel to be completed in almost exactly 3 steps. This is easy, definite, practicable and accurate, besides the longer radius being better adapted to a column carrying knapsacks.

135. To resume the original direction after obliquing, a better command would be "left oblique, march." To resume the march after marking time during the oblique, "full step, march," or "forward, march," would be more suitable. In case a company

were not gaining enough ground to the right by obliquing, it would not be necessary to march to the original front before moving toward the flank—this could be done by commanding another oblique.

141. To resume the full step it would be better in all cases to command "full step, march." It is sometimes necessary with large companies and even with small ones to command "right (or left) oblique, march," before the turn is completed, or cause the company to oblique without a regular command. In this case the command "forward, march," would be of doubtful significance unless it were confined to indicating direction, as it should be. On account of the distance required to make a turn, a captain should not be required, in order to clear an obstacle, to halt or mark time, to wait for all the company to get in line before giving a command to oblique.

The new turn is not adapted to large companies. Take, for example, a company composed of nine sets of fours and two guides making a "turn." How far must the pivot man advance in the new direction before the extreme marching flank overtakes the line? Observing the figure and letting a represent the length



of a company front and x the distance over which the guide on the marching flank has to march to get on the line, and remembering that the short step is one-half the full step we have the equation $x^2 = a^2 + (\frac{1}{2}x + a)^2$ which being solved gives $x=2.4$ a Substituting for a the length in paces of the company front (38 men) we find $x=84\frac{1}{2}$ paces and consequently the pivot guide must advance one-half of this or $42\frac{1}{2}$ full paces before the company can get in line. This is too much in all reason. Take the case of a battalion of large companies at review. Too much ground to the front is required before the second change of direction can

commence. If it be argued that there is nothing to prevent the commencing of a second turn before the first one is completed, it may be stated that there is the objection that the companies will not have gotten in line before they pass the reviewing officer, unless the battalion is marched far enough toward the original right before making the first change of direction. In the case of the writer's command there is not room enough either way and consequently reviews are had in column of platoons although there would be room enough for a review in column of companies under Upton's system. The old "wheel" was probably discarded because it was difficult to execute, but it required very little "sea room" as it were, and always kept the company intact.

145. The 4th command is superfluous.

153. All the men except the last one in each rank must step off together, and in order to determine when they have the proper intervals they must look back over the shoulder—a very awkward and unsatisfactory method. It would be a decided improvement to have only the leading files step off at the command, the others following each as soon as he had his interval and then halt the squad by command.

SCHOOL OF THE COMPANY.

181. The term squad should be used throughout.

182. The section should be a subdivision for close order movements as well as for extended order. If it is proper to divide a company having but four sets of fours into platoons for close order movements, why may not the same width of front for a column be obtained when the company is much larger? The writer has six companies of 80 men each, not including officers, making 9 sets of fours and three extra men to a company. In marching in column then, the fronts are limited to company (9 sets of fours) platoon (5 or 4 sets of fours) and the single column of fours, there being no medium between a platoon front of five sets of fours and one set, yet it would frequently be desirable to march with fronts narrower than five sets and yet wider than one. Column of sections is therefore desirable, and could easily be provided for by having the chiefs of sections march in the front rank on the flank toward which the guide is announced. If movements in close order by sections were prescribed, sergeants would feel that they commanded their sections in *fact*, and discipline would, to that extent, be improved.

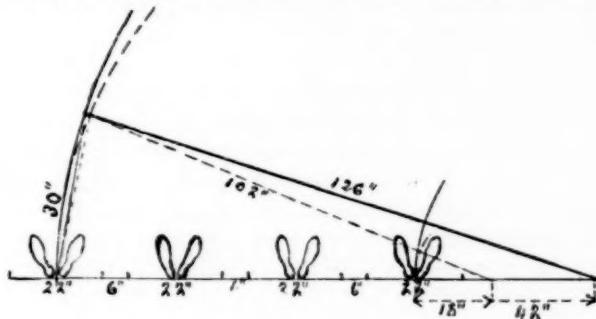
186. To agree with paragraph 119, the command should be, "In two ranks form company, *March. Front.*"

192. The third paragraph should appear in paragraph 31 or 32 where one would naturally look for such instructions.

194. The command should be "Port arms. Open *chamber*. Close *chamber*, *Dismissed*," to agree with par. 46.

196. The number of steps for the marching flank to take to complete the wheel should be given in order that the wheels may be completed simultaneously and the company step off together. This should also appear in second paragraph of 199.

200. By inspecting the accompanying diagram and applying



the principles of similar triangles it will be seen that if the pivot man takes steps of 10 inches the radius must be 42 inches and not 18 inches as in paragraph 196 here referred to. And again if the pivot is to be 18 inches, the pivot man must take steps of $5\frac{3}{4}$ inches and not 10 inches. The selection of the points from which these measurements are made rests on the assumption that a man walks or steps with his feet (not with his shoulders) and that his steps should be measured on the ground on a line passing midway between his heels and in the direction of his march. The book should be accurate where it pretends to be and avoid the embarrassment of drill-masters in their attempt to adhere to the measurements prescribed.

206. The number of steps for the marching flanks to take to complete the wheels should be stated in order that the movement may be completed smoothly.

207. On account of the necessity at times of halting the company the instant the fours unite in line, and since there are no short steps taken by the marching flanks, it follows that the halt

for these flanks must take place at the end of a full step. In order then, to halt them on a line with the pivots, they should arrive on the line at the end of a step. By applying the same equation and principles used in discussing paragraph 133 above, it will be seen that a "wheel" by fours may be completed in $4\frac{1}{2}$ steps and an "about" by fours in $8\frac{1}{2}$ steps, consequently it may easily be prescribed that a "wheel" by fours shall be made in exactly four steps and an "about" in 8 steps, the marching flank slightly increasing the length of his steps during this time (he naturally does anyhow). Some method of this kind for wheeling by fours is almost necessary in large companies of not perfectly drilled men, but by requiring the movements to be made as above perfection is easily acquired.

212. The 1st command is superfluous.

218. Provision for forming fours at double time should be made, so that in the case of a battalion in column of twos issuing from a defile, each company in succession may form fours as it gets through the defile without clogging the column in rear. The number of short steps required to be taken for the fours to get united in the method now prescribed should be given in order that long companies may keep a steady march. Eight short or half steps work very well.

235. The guide should be on the side opposite to that given in the text because this guide already has the trace and direction. In battalion drill it will scarcely ever occur that the new guides on taking their places will find themselves covering, and during the obliquing of the platoons in their front they cannot see to cover well.

236. The old command "right front into line" is more suggestive of the movement than this innovation.

237. Provision for changing direction while marching in line of platoons in columns of fours, should be made.

SCHOOL OF THE BATTALION.

253, page 95. Great stress is here laid on the fact that the battalion is divided into wings; also in the definition of "wing" on page 6. But no tactical use is made of this division. It would be well to prescribe firing by wings and movements in two lines.

267. In the second paragraph the 4th command is superfluous. Also the command "load" should be inserted as second command.

271. It should be permissible to have the guide right or left

as well as centre, as in the case of a large battalion marching parallel to and with one flank close to a ditch or wall. In this case the guide should be on that flank.

288 a. The proper method in the excepted case not being explained here causes misinterpretations. The instructions for posting guides in paragraph 293 should appear here.

299-301. There should be inserted here a method of moving in column of companies to the front from line by some such commands as "right by companies" or "column of companies, first company forward, guide right (or left)."

334. "Close column" should be designated "mass" throughout the text, two designations being unnecessary.

337. In a large battalion it would often be convenient to mass on an interior company.

338. The second command is superfluous.

346. The commands and explanations of this paragraph and paragraph 313 could be so adjusted as to require but one set of commands and explanations.

351. If it is proper to mass a column of platoons, provision should be made for deploying it without having to take full distance.

EXTENDED ORDER.

513. The corporal should be No. 2 front rank and never have a post outside of ranks.

515. It is hard for recruits to learn always to deploy on No. 2 front rank, extend intervals on him, close intervals on him and not mistake him for the guide also at times when he is not. If the corporal is to be the squad leader in fact, why not put him No. 2 front rank and make him the *real* base at *all* times, the one on whom all deployments, extensions, closings, assemblies and rallies are made. He would then occupy the most convenient place at which the squad could assemble and rally, while he would be in a better place to command it than on a flank and there would be no occasion for his being out of ranks to control it on account of it being such a small body. The dignity of his position as corporal would be increased by never making him regulate his interval on one whom he should command.

590. Inasmuch as the commands prescribed in the third paragraph mean simply "halt" and since the *proper* commands for firing have to be given afterward by the same corporal before any

firing is allowed to take place, and since the number of volleys is regulated by the number of times he commands "fire" it would seem that no unusual and exceptional command was necessary here at this critical time—nothing but the command "squad halt" followed by the proper commands for kneeling or lying down and firing. Of course paragraph 542 provides that firings shall always be executed from a halt, but this does not seem a sufficient reason for inventing a new command for halting a squad and applying it at a most unusual and critical time. Par. 543 bears somewhat on this question.

608. After reading the third paragraph it is impossible for one to understand how there can be a *base company*, or that there is much necessity for a major after he has given utterance to the *one* and *only* command prescribed for him in battle order, viz., "Form for attack, such the base company. *March*." How much advancing there shall be does not depend on the base company nor on the major, but it does depend upon whether the captains work together or at cross purposes, like balky horses in a team. The base company in battle seems to have no functions as such, but enjoys the distinction and holds the title by brevet only, as it were.

In the extended order for the battalion the value of giving orders for movements on the battle-field by a few fixed words of command is set at naught, and from the necessities of the case every major must invent his own commands and signals and prescribe a drill of his own making. Take the case of assembling the battalion, par. 607. There are no prescribed commands to indicate where the assembly is to be made—whether on the right, left, or centre, on the line or in rear of it—and what the formations of the battalion and companies are to be. All these should be laid down in set words of command and the manner of executing them explained in order that the movements may be made in the most direct manner and without confusion. It has been stated that it was intended to give the majors much latitude and opportunity for the display of originality. This has certainly been accomplished, but it is a shifting of responsibility. We ought to find the best methods in the drill book, and they should be there for the sake of uniformity of instruction. Of course every major now has his own methods which his battalion understands, but there will scarcely be two battalions used to the same commands and signals, and battalions with new majors will have to learn new

methods. This would not be propitious in war times. The extended order for the battalion consists of a smattering of tactics, field engineering and little or no drill. To the average major of volunteers in a hurried mobilization it would afford little guidance as to the means of handling his battalion after he had launched it forward at about 2500 yards from the enemy, and no amount of drill book study would enable the captains to act in harmony with the major's wishes. It would seem that the very purpose of a drill book was abandoned at a time when it was most needed. It should prescribe, in extended as well as in close order, the necessary movements for a battalion and the proper commands for them. How these movements should be applied is really the domain of tactics.

GUARD DUTY.

The contents of the "Manual of Guard Duty" should be incorporated into the drill books of the three branches of the service. In order to learn how to mount a guard and march it to its post, one has to refer to the drill book, but to learn how to post a relief one has to turn to the "Manual of Guard Duty." Again, the drill books of the three branches treat of advance guards, rear guards and outposts, so why not also include the "Manual of Guard Duty," the principles of which are applied in the foregoing? The "Manual" should not be inserted in its entirety, but should be separated and the different parts placed where they would properly belong. This would permit some abridgment, as there are some parts of the "Manual" explained in the drill book. As an instance of the impropriety of having the two books separated, take the presenting of the two guards to the officers of the day. There is no mention of this in the drill books, although they prescribe what takes place immediately before and immediately after this saluting. (Infy. D. R., pars. 726, 727 and 728.)

The index is of much assistance only to those thoroughly conversant with the book and the index.

Reprints and Translations.

CONCENTRATION AND DISTRIBUTION OF ARTILLERY FIRE.

I.

BY CAPTAIN W. L. WHITE, R. A.

From The United Service Magazine, London.

IN November, 1892, Colonel Maurice delivered a lecture, which has now reappeared in the *United Service Magazine*, before the Military Society of Ireland, on the subject of "The Artillery in 1870-71."* It was given extempore and published from the short-hand writer's notes with some additions, notes and corrections, in the April number of the *United Service Magazine*. In the course of the lecture he criticised severely some remarks of mine, on the subject of distribution of fire, made during a lecture at Woolwich in 1891. I infer from a careful reading of Colonel Maurice's lecture that he concludes that I mean "distribution" and "dispersion" to be one and the same thing, which is very far from being the case. It is difficult to lay down a precise definition of the word "distribution" as it is to-day understood in the artillery, because distribution must vary with circumstances; but, speaking generally, distribution is to dispersion what a charge from a chokebore is to a charge from a blunderbuss at a range of fifty yards. It is, after all, principally a matter of "pattern."

The remarks in my lecture which must have given rise to Colonel Maurice's strictures came about as follows. During the practice season of 1891 several batteries, when a target had been allotted to them, were in the habit of firing almost all their rounds at the ranging point only, to the neglect of other portions of the target. It thus often happened, when the target was an opposing battery, that the windward gun was practically annihilated, while those more to leeward remained almost scatheless. This, I pointed out, was due to faulty distribution, which, had it occurred on service, would probably have resulted in the retirement of the attacking battery before the accurate fire of the unhindered guns of the target battery. A senior officer present desired to know if I discarded "concentration of fire," to which I replied: "In advocating the distribution of fire I do not in the least wish to discard concentration, but it must be concentration against a tactical point and not against a, so to speak, mathematical point, such as a single gun. The tremendous effect of modern shrapnel does not require the concentration of fire against a single point to the neglect of others;

* Reprinted in the JOURNAL M. S. I. for September, 1893, Number 65.

indeed, it would be dangerous to do so, because the remaining guns would then practice almost under peace conditions, and with almost peace precision. But concentration of superior force and fire against a tactical point is highly desirable." Such were my views then and such they are now.

In order to prove that the views I have expressed are in accordance with those of continental gunners, I propose to quote Colonel von Rohne, whose works on Artillery Fire are largely in use in the German schools of gunnery, and are also looked upon as text-books by other powers. He says: "All recent works which have appeared on this subject (ranging of masses of artillery) inveigh against the concentration of fire on a single target."

Again, after the great Artillery Camp at Chalons in 1884, numerous French works appeared on the subject of the fire of masses of artillery, and Colonel von Rohne selects that of Captain Viant as being extremely good and in accordance with his own opinions; he thus epitomizes Captain Viant's remarks:

"The gist of his views is that the intensity of modern artillery fire does not permit fire to be concentrated on one portion of the opposing artillery while the other portion is let alone. On the one hand the ranging is made more difficult, and on the other it permits the enemy to carry out his ranging quite without let or hindrance. The ranging completed, such a concentration is permissible in order to hasten the consummation.

"In particular, he distinguishes between the procedure when the enemy is equally strong, weaker or stronger, or whether he is already ranged or still ranging."

"When the opponent's artillery is in equal force, and when the enemy is not yet ranged, he will only admit the concentration of fire in a single case; namely, when the target is to a great extent shrouded in smoke, it may be advantageous to concentrate fire against the unhidden portion. The distribution of fire will, however, be imperative when the first of the enemy's shell fall in the position; then shrapnel will not be long in coming, and the batteries might be annihilated before their ranging was completed; especially when all the enemy's batteries are not disturbed by their fire. The only salvation lies in the quickest possible opening of shrapnel fire distributed along the whole of the enemy's line."

As the case involving smoke will not probably arise in the future, the above opinion comes to this, that, with two equal bodies of artillery coming into action simultaneously, fire must be distributed over the whole front with a view of preventing the enemy ranging by disturbing his fire and trying to range before he can do so. If successful, some of his batteries will be silenced after a time, and the surplus batteries may then be employed in the concentration of fire. Until that preponderating force is obtained, whether by the fire action of our own batteries or by the skillful occupation of position, it will be unsafe to leave any of the enemy's batteries unmolested.

The above may be stigmatized as a theorist's views of the conditions of service, but, if we consult the writings of an actor in the drama, we find in Hofbauer ("German Artillery in the Battles near Metz," page 141) one of

the very few allusions to the distribution of the fire of a mass of artillery in action. He says, in his description of the battle of Vionville:

"On the other hand, the effect of the French artillery posted on the north of the high road as far as the old Roman road was felt by several batteries in the centre of the position. This occurred when the left flank of the German artillery position was prevented from keeping the hostile guns sufficiently in check. Hence the rule, that in a great line of battle no part of the artillery may cease firing merely on account of the great range, but must keep the enemy's artillery in check by a deliberate fire, so as to prevent it from enfilading and taking obliquely other parts of the position."

This is practically the same view as von Rohne's, that you cannot afford to leave any of the enemy's artillery alone; and, therefore, with equal forces concentration cannot begin until a superiority of fire has been established.

Hofbauer makes a similar allusion on page 240, when discussing the battle of Gravelotte:

"The artillery of the first army now formed a mass of twenty-six batteries, 156 guns in all. The commanding officers were careful to concentrate the fire on the most important points wherever this was necessary or had not already been done. The German guns had previously established their great superiority over the enemy's artillery."

It is a pity that the technical administration of the fire in this campaign is not treated of in greater detail; but, as von Rohne observes:

"A tactical regulation of fire was then existent, a technical one such as is in the present day necessary * * * was not acknowledged."

Hear also von Schell, an officer of great experience in the 1870-71 campaign * :

"In the same way a cross fire of separate groups and divisions must be avoided, as it is somewhat dangerous at the commencement of the artillery duel to concentrate the fire of more than one division upon one and the same object. For instance, supposing that the three divisions of the corps artillery are confronted by an enemy of equal strength, if we concentrate the fire of the three divisions on his centre we shall certainly crush him here, but we shall at the same time leave his flanks at liberty to open a highly destructive oblique fire on our flank batteries, which they will inevitably do. * * * It is, besides, quite contrary to the object of the artillery duel only to subdue one portion of a long line of opposing artillery, leaving the remainder to operate as they like against us."

"We may, therefore, lay down the principle that the enemy's artillery should be engaged along its entire front, and that that portion of it that confronts each of our divisions should be assigned as a mark to the latter."

Colonel Maurice quotes several instances in which German batteries in position crushed, by a concentrated fire, French batteries arriving in succession on to their position. This is a precisely similar case: each French battery as it came up was an inferior force upon which the superior force was able to concentrate its fire; moreover, a battery only coming up and

*See page 104, "Tactics of Field Artillery," translated by Colonel Turner, R.A.

not yet ranged is a very inferior force to batteries in position and probably already ranged.

In a note to the discussion which followed his lecture, Colonel Maurice formulated an example as an exposition of his views, and I hope he will forgive me if I venture to criticise his views as he has done mine. The example is this: One hundred guns a side are engaged; one side, which I will call his, concentrates its fire on one of what I will call my batteries at a time; I, after ranging battery to battery, open a distributed fire along the whole line. The ranging of an enormous mass of guns on a single small point, such as a battery, even if they can all be brought to bear upon that point, is a matter of great difficulty on account of the large number of shell falling about the target at the same time. Indeed the operation could more quickly be carried out by a single battery, as was instanced by the action of the artillery of the Prussian Guard at Sedan. But, granted that he succeeds in ranging and then concentrating his fire on my one battery, which is duly wiped out, he has then to find the range, or at least verify it, of each of my batteries in succession. What are my batteries doing all this time? With the exception of the one that has been made my scapegoat, they have been quietly ranging undisturbed by hostile fire, so that when the next movement of the concentrated fire is to take place he will find that he is attempting to find the range of a line of guns that is already ranged. Continental writers are of the opinion that, under equal circumstances, the artillery that first finds the range should win the day. Colonel Maurice's statement, "As to the fear that other guns will fire at me with appalling effect because they are not being fired at at all, and they can therefore range on mine at their leisure, is, like the other, a peace nightmare," sets aside the argument which continental writers, not all mere theorists, hold to be the weak point of his case. If, as he argues, his guns are to make good practice whilst being fired at, why should not mine also do so while not being fired at? The odds are that mine would shoot the better.

But, to take another view of his case; suppose he elects to range over my whole line at first and then concentrate before he has obtained the necessary superiority of fire that may permit him to ignore the relaxed fire of some of my batteries. Some of his batteries will have succeeded in finding the range and will be in good condition, others will have failed and will be beginning to weaken; my batteries will be in a similar state. If he now turns off his fire entirely to one small portion of my line, those of my batteries that have hitherto failed will now be able to pluck up, and will very possibly succeed, while those that have already succeeded will make all the better practice. His batteries that have succeeded will have to turn off their fire, alter fuses, etc., and pick up the new target, and the fire discipline of those of his batteries that have failed will probably go to pieces altogether. It is my firm belief that to attempt the operation at this stage would be to throw away the action altogether.

The action, too, of bringing round the trails and, in some cases, of having to slightly wheel up the batteries to bring the concentrated fire to bear, would present a much more favorable target to my fire.

As Colonel Maurice does not mention them, I have forbore to dwell

upon the technical difficulties, especially those of the observation of fire, of the transmission of orders and corrections of elevation and fuse to suit the differences of position of his batteries when bringing their concentrated fire to bear, and which must be inherent to the concentration of such a huge mass acting as one unit on a comparatively small point, and which would tend to make his fire much slower, gun for gun, than mine.

Let me state a case from Colonel von Rohne's works, which illustrates the combined concentration and distribution of fire. Two batteries, A and B, engage an enemy's battery, C. If it can be done without confusion, both A and B range at the same time upon different points in the enemy's line; if this is not possible, then one ranges for both, and the other joins in as soon as the range has been found. When the range has been found, what should be the distribution? Some would say, let each battery A and B, take an opposing half battery, and by concentrating two guns on each of the others, silence them. This, however, is not the accepted solution, for if either A or B had to turn its fire on another objective it would leave three of C's guns unmolested and involve a fresh distribution on the part of the other battery. German gunners would, therefore, under these circumstances, distribute the fire of both A and B over the whole front of C; the same intensity of fire would thus be gained, and either A or B could turn its attention, if required, to a new objective without involving a fresh distribution on the part of the other.

Since writing the above it occurs to me that in one of the examples of which Colonel Maurice treats in his lecture, that of the attack of the Château of Geissburg, there is an excellent example of the distribution of fire, and I think it is the only time that the official account enters into so small a matter as the distribution of fire of a single battery. The facts were: the German infantry had attacked the château without waiting for the artillery and had been repulsed, some of them remaining under cover close under the walls. When the first battery came up its object was so to shake the defense that the infantry could again press into the assault, it was therefore "told off by sections to shell the different stories of the building," a distributed fire which produced its due effect. It is true that the fire of the battery was concentrated on the tactical point, the château, but it was distributed over that point because it was not beyond its capabilities, and if any part of the defenders had remained unshaken by its fire they would have occasioned serious loss to the advancing infantry. If they had concentrated on each story in succession, they would have taken longer, and they would have been exposed to loss from the fire of the men in the other stories. If an insufficient number of guns had been turned on the château, while the remainder had been given another objective not concerned with the tactical point at issue, that is what I should call dispersion of fire.

As to dispersion of fire, I have never advocated it, and have nothing to say about it but to condemn it.

One more illustration of the distribution of fire whilst concentrating it against a tactical point, and I have done. Prince Kraft, in his fourth letter on Artillery, speaking of the battle of Sedan, says:

"It was perfectly clear that by taking the Bois de Garenne we should complete the entire defeat of the army of the enemy. * * * But since masses of infantry, which had composed two of the enemy's beaten corps, were crowded together in this wood, it was necessary to begin by preparing the attack. With this object I divided the long edge of the forest that extended before us into sections, and I assigned one section to each of my batteries. The first gun of each of these units was to fire at the very edge of the wood, and each of the succeeding guns was to fire in the same direction, but was to give a hundred paces more elevation than the gun on its right. In this manner the edge of the forest and the forest itself, to a depth of five hundred paces, would be covered with a hail of shells. The splinters would carry yet further."

The above is an invaluable example of what is now known as "distribution in depth," and it is combined with a concentration of fire on the tactical point; with what result is well known.

II.

BY CAPTAIN E. J. GRANET, R. A.

For very many years it has been a custom of the Royal Artillery to set up for itself certain temples of knowledge, or, to put it in plain English, to look upon certain stations as the headquarters of artillery science. The first of these universities is Woolwich, and here the doctrine of smartness of "turn out" and exactitude of parade movements is rigidly enforced. On the appearance in this country, through Major—now Lieutenant Colonel—Walford's translation, of Prince Kraft zu Hohenlohe's famous "Letters on Artillery," our artillermen turned their attention to the importance of good shooting, and Shoeburyness and Okehampton took the place of Woolwich. And now, owing in great measure to the recognition on our part of the fact that great skill is required to bring up guns into positions favorable for the development of their fire, the School of Gunnery has been to a certain extent supplanted in popular favor by Aldershot.

While, however, the setting up of these schools of thought has done much towards the improvement of the arm, it has occasionally caused discussions.

Readers of this magazine have been recently favored by one between Colonel Maurice and Captain White, the former appearing as the representative of Aldershot, and the latter as that of Okehampton. In the course of a lecture at Dublin, Colonel Maurice delivered a vigorous onslaught on Captain White, to which the latter has just replied by an equally vigorous counter-attack. The *casus belli* was a lecture* delivered by Captain White at Woolwich in 1891. It may be as well to quote his actual words. "*Distribution of fire*, though greatly improved, is not yet what it should be, nor will the best effects be produced in the shortest time until the fire is distributed from the first shrapnel, or, in the case of continuous fronts of target, from the very first round. We must not allow our views to

* Proceedings of R. A. Institution, December, 1891.

be narrowed by the unreal conditions of the practice ground, one of which is the want of moral as well as material effect produced by the bursting shell of a well-distributed fire, an effect which would be postponed, perhaps never attained, if we confine our fire too long to the ranging point ; at all events our men must suffer the more from the undisturbed fire of the enemy the longer it is undisturbed."

This sentence was taken exception to at the time by an officer from Aldershot, who asked whether it was intended that concentration should be discarded in future, and quoted in support of his objection one of the instances quoted by Colonel Maurice—the line of German guns at Wörth.

Now, in his reply Captain White seems to have missed a very important point in favor of his contention that distribution should begin with the very first round of shrapnel. Both in his lecture and in his pamphlet he addresses himself by implication, if not in so many words, to battery commanders, and if, then, he were willing to admit that this necessity for early distribution only applies to the fire of single batteries, Colonel Maurice's case against him would fall to the ground. For even in the extreme case of two opposing lines of 100 guns each, each battery of the concentrating line would *distribute* its fire over the whole front of the single battery of the enemy's line ; and, therefore, in this sense "concentration" and "distribution," though certainly not synonymous are equally not contradictory terms. Had Captain White, then, been content to remain in this apparently unassailable position, his victory would have been assured. He goes further than this, however, and, after quoting from Colonel Von Rhone and Captain Viant, goes on to say that "with two equal bodies of artillery coming into action simultaneously, fire must be distributed over the whole front with a view of preventing the enemy ranging by disturbing his fire and trying to range before he can do so." In this opinion, well backed up as it is, he will not receive such unanimous support as if he had confined himself to the case of the single battery—the fire unit, and had not extended his doctrine of distribution to the brigade division or tactical unit.

On first reading the report of Colonel Maurice's lecture I wrote to a brother officer who has many friends in the German army, and asked him to ascertain for me the latest views on the subject in the German Artillery. I put to him the case of two brigade divisions of three batteries each coming into action simultaneously. Here is his answer written from Berlin : "I talked over the matter you mention with several German Artillery officers and found an enormous variety of opinion. Some are for each battery engaging one of the enemy and trusting to superior shooting. Others would concentrate all three on one, crush it, and then the next. Lastly, others turn two batteries on to one, while the third battery engages the two others of the enemy. When doctors differ, who shall decide ? All these men were good men who knew what they were talking about."

Now, this is extremely interesting, as showing that in Germany this matter of distribution or concentration of fire is just as far from being definitely settled as it is here in England. Just as all the above three methods possess their advantages, so also each of them has many disadvantages. The advantage of the first form of attack is that the enemy's rang-

ing is disturbed from the first. It is simpler also, as it enables each battery to range on a different target, and so confusion in the observation of fire is reduced to a minimum. The second method being the converse of the first, the advantages of the first are its disadvantages, and *vice versa*. There is one point to be noted, however. The use of smokeless powder renders observation of fire much easier, and therefore a battery that is not being fired at will be ranging under absolutely peace conditions, since the smoke of its shells as they burst will no longer be obscured by, or confounded with, the smoke of the battery it is firing at. Von Schell ("Tactics of Field Artillery," translated by Colonel Turner, pp. 53, 54), in speaking of an artillery duel between two brigade divisions from the first artillery position, says: "It is evident that the range can be best and easiest ascertained when each battery has a different object to fire at, and as far as possible direct to its front. Should, however, the object be a long-continued one, as, for instance, a line of guns, it should be divided into as many parts as there are batteries to fire at it. It is then left to the battery commanders to select an object in the part of the line apportioned to them, which can be best seen from the position of the battery, such as the gun which stands out most conspicuously on the horizon line."

"If when engaging the enemy's artillery his batteries are separated by wide intervals, and each one of them can be apportioned as an objective to each of our own, we gain the advantage of finding the range, from the beginning, of several different objects, which generally are not in one and the same line. It should be borne in mind that our fire should be directed on one battery after another, and thus after overwhelming one we can proceed at once to crush a second one, and so on. It may be objected that if, after obtaining the range of a battery, our guns are directed on another, it will take advantage of our doing so to change its position; but, on the other hand, such changes of position are rarely practicable on the part of the defense, and they cannot be carried out without being perceived by the assailant."

Major May, R. A., in a lecture on Masses of Artillery, given at the R. U. S. Institution in May last, tells us that at the French artillery manoeuvres at Chalons last year, "as soon as several batteries began to fire simultaneously, ranging was found to be impossible, unless each battery devoted its attention to a special target. The French think that every battery, therefore, must have a particular position of the hostile line assigned to it as its particular care. And this is so, not only because of considerations as regards finding the range, but also because it is desirable that no battery of the enemy's artillery should be left to bring its fire to bear undisturbed."

"Comparing the system of 1884 with that which is here described, we see that ideas have altered considerably. At that time it was regarded as a principle that all the batteries of a group should concentrate their fire on one target. * * * I believe myself that, even when you have a more numerous artillery, concentrating on one target will be the quickest and surest road to victory."

The third method of attack mentioned above is open to the objection that the third battery, which is to "contain" the other two, must either

disperse its fire, or else it must engage the two batteries singly, one after the other—leaving one undisturbed.

Now Major May has in his lecture alluded to a fourth method, which has been happily named by Colonel Langlois *feu de rafales*, or squall, or gust-fire. Most artillerymen will be found to agree upon three points. The first is the importance of obtaining the correct range and length of fuse; secondly, the very great difficulty of doing this when more than one battery is firing at the same target; lastly, the fact that victory depends upon concentration. Now this "gust-fire" seems to solve the difficulty. Briefly described, it means a sudden "switching on" of a rapid concentrated fire on different portions of the enemy's line, one after the other. Let us take, for purpose of illustration, Colonel Maurice's line of 100, or say 108 guns, composed of six brigade divisions of three batteries each, arriving more or less simultaneously in position against an equal force. Colonel Maurice would at once concentrate the fire of his eighteen batteries on one battery after the other. There are, however, two objections to this procedure besides the one of allowing the enemy to range undisturbed, which has been dealt with by Captain White. A line of 108 guns takes up roughly about 2000 yards. Suppose the distance between the two lines to be 2000 yards, and that they are parallel to one another. If, then, the distance between the right battery and the enemy's left is 2000 yards, the distance between the left battery and the enemy's left will be over 2800 yards. Therefore, if the process of ranging battery by battery is neglected, a great proportion of the fire will be wasted. Again, such excessive concentration is really waste of ammunition, or rather waste of powder, when, as Major May says, "one shrapnel that bursts correctly is sufficient to wipe out a whole subdivision." Captain White's method, as has been said before, is open to the objection that it is too lengthy and does not lead to any decisive result. A happy mean between these two extremes appears to be a combination of Von Schell's and Colonel Langlois' methods. There is no doubt that we must first of all range and "verify" battery by battery. Then, as soon as he has ascertained that this procedure has been thoroughly and carefully carried out by each of his batteries, each commander of the brigade division will order a concentrated *rafale* fire of two or more rounds per gun of "rapid fire by sections" on one battery, turning in succession to the other batteries of that portion of the enemy's line which has previously been allotted to him, taking care that there is as short a pause as possible between the changes of direction of fire. To do this efficiently will require a high degree of training on the part of all ranks, but it is after all only a matter of practice, and I do not think that we need be afraid of attaining to the perfection of training necessary for a manœuvre which can be performed by other armies.

To sum up, then, the arguments on either side. Colonel Maurice says: "The experience of war teaches us that in order to win we must concentrate. This applies to everything as well as guns—men, ships,—everything. Captain White says that we must win in order to concentrate, and this is false teaching." Captain White, however, does not really say this. Everyone will admit that there is more than one preparatory process to be gone

through before we can, by a concentration of fire, hope to beat down and crush the fire of our adversaries. First of all, we must have the guns—and here we start under a grave disadvantage. We have only 84 guns to an army corps as against the 120 of most European nations, and they are shortly going to increase this proportion. Secondly, your material must be as good as that of your enemy, and here again we fail. Our present 12-pr. is an excellent model of an armor-piercing weapon, but owing to its absurdly high muzzle velocity, which brings in its train a host of evils, it is a bad gun for field artillery. Thirdly, your guns must come up in full strength at the beginning of the action. This is a matter for our generals, and can be confidently left in their hands. Fourthly, you must find a suitable position, and for this the officer commanding the artillery is responsible. Fifthly, you must obtain the correct range. Sixthly, says Captain White, you must distribute your fire along the whole length of the enemy's line and, as you obtain a superiority over certain batteries, you can gradually concentrate your fire on the remainder. Colonel Maurice and others omit this last condition.

In his article in *The United Service Magazine* for June, "Mahan on Nelson and Pitt," Colonel Maurice explains that he would, like Nelson, "concentrate an overwhelming fire of artillery upon one particular section of his enemy's ships, whilst he so manoeuvred as to avoid the fire of those which he did not attack." No doubt that when this could be done Captain White himself would be glad to do it, but with a line of guns over a mile long it seems difficult.

In conclusion, then, both Colonel Maurice and Captain White have done great service in helping us to appreciate the preliminary steps which must be taken before our guns can hope to obtain the victory in the artillery duel, which is itself only one step on the way to the decisive infantry attack by which alone victory can be assured. And just as the normal attack formation for infantry has been discarded, so should we refrain from dogmatism as to any particular form to be followed on all occasions; but, again following the example of the infantry, we should by constant practice prepare ourselves for all and every emergency.

III.

BY MAJOR J. J. HENRIQUEZ, R. A.

The subject of Artillery Fire has in these pages become a heated battlefield, and, as in many other engagements, the conflict of opinion would appear more the outcome of the love of fighting and glory than of any irreconcilable differences.

If my reading of the vexed question of "concentration and distribution" be correct, the general principles of their respective advocates are not in reality so far asunder as, by the absence of defining boundaries in their application, would appear. With the object of eliciting the views of more experienced soldiers than myself I offer this *précis* of what I conceive to be the limitations in the practical application of these so-called antagonistic principles.

The primary object of Colonel Maurice's lecture, it seems to me, is to show the great importance and scope of concentration of artillery fire, not on a geometrical point, which is absurd, but on a tactical objective. This would appear to be the view taken by the president, Lord Wolseley, in his final remarks. That this leading principle is sound and should never be lost sight of by an artillery commander does not to my mind imply that it is applicable in all places and at every moment. Captain White, in his "reply," evidently recognizes the advantage of concentration on a "tactical point," but at the same time deprecates Colonel Maurice's lucid exposition of the potency of concentration. On the other hand, it is not at all clear how far Colonel Maurice underestimates the restrictions imposed on concentration by the actualities of war.

To come to details, the limitations to concentration appear to me as follows :—

1. *The technical difficulties of ranging on a point (for ranging must needs be on a point) with any larger force than a battery.* This is due to the fact that observation would become hopelessly confused if shell were fired from all parts of the artillery line on the ranging point.

2. *Weakness—due to inequality in numbers, position, etc.* While a force of artillery can only just hold its own against its opponents, it would be obviously playing into the enemy's hands to relax its grip of any portion of his effective line.

3. *The risk of being yourself reduced in detail.* This danger cannot well be estimated till the action is in full swing, as it depends so much on topography, moral, and other accidental influences.

4. *Excessive range.* The long ranges at which the artillery duel often takes place, will, during this stage, render the concentration from the more distant portions of the line less effective, and at times the view will be obstructed by inequalities of local features.

From this it would appear that any disinclination to give full prominence to concentration, by Von Schell and writers of that period, may be put down to this limitation. It was then that the relative ranges of infantry arms and artillery had come so near together that artillery was perforce made to give up, to some extent, the concentration tactics of Napoleon, and to fire more or less exclusively on the nearest targets immediately in front. For the future it remains to be seen whether infantry fire will be found so effective at extreme ranges as to restrict the concentration of artillery fire in its first positions.

5. *The Uncertainty of ranging.* Under certain conditions, the time occupied in ranging and its result are very uncertain. It would hardly be expected (even if for other reason desirable) that the great mass of artillery should remain all this time "with its hands folded," trusting to one battery to carry out this uncertain experiment, which would be further imperilled by the probable concentration of the whole of the enemy's fire on one battery. For it must be borne in mind that in these days artillery is frequently so placed that it cannot be discovered till it opens fire, and it would then appear to the enemy that only one battery was in position.

6. *The risk of disclosing prematurely the plan of attack.* This applies

more especially to the subsequent phases of the action, but even during the artillery duel, its too precipitate action will unduly force the hand of the general officer commanding. With these limiting features in view, it seems to me essential for the artillery commander to be ever on the alert to seize the smallest opening for the concentration of an adequate force on that section of the enemy's line, which for the time being is of greatest tactical importance. It is plain that such occasions frequently present themselves during the deployment of large forces, in the form of sudden accessions to the strength of the line, local accidents of position, moral, topography, etc. On the other hand, unbroken distribution is justifiable only from necessity. It can but produce slow, indecisive results, and, carried to an extreme, would become an exhilarating stimulus to the enemy.

These considerations point to the following rules in conduct of artillery first coming into action.

1. Artillery fire should not begin prematurely, *i. e.*, till an adequate force is available, and the other arms are in position to support.

2. Artillery fire should, in the first place, be employed to search and discover as far as possible the extent of the enemy's position and his distribution, and also to harass his deployment. His strong and weak points cannot otherwise be discerned with certainty.

3. Batteries should come into action simultaneously. In the absence of marked tactical features, which can be at once made the objectives, each battery should range at once, and fire upon the section of the opposing line immediately in front. As soon as the range has been established battery commanders should fill in a form, giving the target range, fuse, and any noteworthy points, and transmit it to officer commanding the artillery line. In the hands of this officer these data must afford most valuable information as to the enemy's position, and can be turned rapidly to account by concentration on any tactical section, as the occasion presents itself.

INFANTRY TACTICS.

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From Loebell's Annual Reports.

ONE might imagine from a perusal of various writings that there is no such thing as "infantry tactics," and it would not be difficult to support such a proposition with proof. At any rate, there is some danger in viewing the conditions and circumstances of the combat—that which is understood as tactics—from the standpoint of the specialist. The general idea of combined action, the great common object of the combat, is apt thereby to become limited and dimmed. But it is the correct conception of the tactical combination on which correct tactical coöperation depends. Such a thing as a tactical division of labor finds no place on the battle-field of to-day. This point should be kept in mind in all tactical considerations and precepts, and in the training of troops. No branch of the service exists for its own sake, but for purposes of war. War demands

uniform efficiency of all arms; that army alone is at the height of tactical training when all its component parts show equal efficiency in war.

This view is to-day the prevailing one and explains why during the period of peace which, in the main, has obtained since the Franco-German War, such a development, striving and competition has shown itself in all branches of matters military and in all great armies, to an extent not heretofore found in the annals of the history of the art of war. In consequence of the universal liability to service, it is no longer armies, but nations that are engaged in military competition; and this lends to all these efforts a particularly grand background.

It is but natural that questions of technique and organization should take precedence over tactical questions. For the enormous armies of the present time a solid organization, and an equipment with the very best of arms is the indispensable foundation of tactical success on the battle-field. For tactics even in its most extended sense, is not a thing by itself, but is indissolubly connected with the efficient organization and technique of an army, with its spirit, its moral, with intelligent and skillful leading.

On this point also the great military powers are agreed, and theoretically at least, it would seem that the danger of looking at tactics mainly in its mechanical part as an art which has to do with forms and men trained as automatons—shooting machines—has been removed. This conception which up to a recent date has had powerful adherents, and still has, will always continue, because the mechanical or external part, the routine, or habit, and, in connection with it, tradition, will ever be more convenient and easy, and therefore more usual with most men, than intelligent initiative and hard intellectual work.

For the present, at least, the strife on the field of tactics has, beyond a doubt, been decided against the adherents of the mechanical. A glance at the regulations and tactical precepts of the more prominent armies suffices to prove this and the drill regulations for the German infantry of 1889 have set the pace. Five years have however elapsed since then, and in the meantime tactics have not remained at a standstill. Many weighty technical improvements appear in this period, such as smokeless powder, improved small arms, intenser effect of the field artillery projectile.

This victory of the freer, far-seeking side of tactics, which lays most stress on warlike efficiency, has been enhanced by the facts above referred to. The fact that in all great armies uniform, and uniformly healthy views of tactics prevail, has considerably increased the difficulty of rendering a sufficiently ample report on the state of tactics. To-day it can no longer be a question of reporting on special forms or habits peculiar to this or that army, for these no longer exist. Nor is it possible to credit this or that army with a greater degree of improvement in the field of tactics. There certainly are some differences in the tactical action of this or that arm, but national characteristics should be taken into consideration in this regard. In the main it would not be consistent with facts and impartiality to concede to any army a considerable advance over the others in the correct estimation of tactical requirements in war, and in the endeavor to utilize them practically in peace training.

In view of this concurrence of tactical conception a report on tactics would not now seem a particularly thankful task, because rather tame, still it is the endeavor of the "Annual Reports" to present from this field—the most important of all matters military—a review which looks less upon the bony structure and muscles visible at the surface, and more upon the more delicate nervous plexus of tactical tendencies, which, for the most part, have become matters of controversy to-day.

The compiler is favored by the fact that he is to render a report on infantry tactics. Infantry tactics of combat were exceedingly simple in former days, but the formal part of tactics, which constitutes the subject of peace training, was all the more complicated. To-day the reverse is the case. The formal tactics of infantry have become simpler, the practical application has become disproportionately more difficult. Hence the controversies on tactical points. They do not concern the "what" and "where" of the science of fighting, but the "how."

For instance, all are agreed that in spite of the improvements in arms, the offensive is and remains the most effective form of combat. Whether you take the German or Russian, Austrian or French, Italian or Belgian regulations, in all the offensive is recommended and in all the fostering of the offensive spirit is demanded. The same picture is presented by the tactical literature of these countries. The offensive action of infantry is now claimed by most of the armies named as the one that has been habitual with them.

This shows that with the appreciation of the offensive and the stress laid on it in peace training, relatively nothing is gained, because all armies are striving for the same end.

The same is true of the appreciation of the great importance of field artillery for the result of the infantry combat. In all armies field artillery, in point of number, technique and organization, has reached such a level that a superiority in this arm, such as favored the Germans during the Franco-German War, would seem impossible in the future. The tactical deductions therefrom are self-evident. At any rate, infantry should not count upon finding its way prepared by the effects of overpowering artillery fire, as was often the case in the war of 1870-71.

If then the appreciation of the powerful influence of artillery on the infantry combat has brought it about, that field artillery is no longer considered an auxiliary in the principal stages of the battle but an equivalent factor, the infantry on the other hand has realized that, owing to this general increase of the effect of artillery fire, the so-called artillery duel will frequently fail to down the opponent definitely, and that then, as heretofore, infantry will have to bear the brunt of the fight, not only under the fire of the opponent's infantry, but of his artillery as well.

With equal uniformity comes the conviction that, notwithstanding the attacker's moral superiority, he has prospect of success against an enemy, approximately his equal, only after superiority of fire has been gained. In all regulations, in all tactical discussions, that point is emphasized. After what has been said, it remains doubtful, whether in the struggle for superiority of fire one's own artillery will always be able to play a great rôle.

It is a matter of indifference, whether superiority of fire is gained in a purely mechanical way, *i. e.*, by superior marksmanship or a superior number of rifles, or by the effect of concentric, flank or reverse fire. That indeed constitutes the essence of the tactical art, so to employ troops as to produce situations which facilitate beating the enemy down and impairing or rendering difficult his defense.

Superiority of fire is produced, directly or indirectly, only by a tactical excess. This tactical excess may be in moral tone, one of the two opponents possessing stouter-hearted, better disciplined, better trained soldiers. It may manifest itself in more skillful tactical leading, knowing how to concentrate superior numbers on a decisive point—oblique order of battle—and lastly it may be created by superior strategical leading, knowing how to bring superior numbers to the battle field against inferior numbers.

This tactical excess, one of the most indispensable factors of success, is disproportionately more difficult to produce to-day than was the case on the victor's part in the wars of 1866 and 1870. In 1866, among other things, a superior infantry armament, superior strategic leading and more appropriate infantry tactics, contributed much toward the result. On the other hand, in 1870-71, the German infantry tactics contributed but little toward that tactical excess. Neither in its principles nor in its form was the German infantry tactics much superior to that of the French, this excess found its main support in the spirit of a tenaciously sustained advance.

The development of infantry tactics from 1888 to 1893 has, beyond a doubt, not only increased the correct appreciation of the essence of these tactics more than was the case from 1870 to 1888, but this development has also favored tactical forms, although it might seem as though on these very points there were still differences of principle among tacticians. This appearance, however, is misleading inasmuch as there is nowhere a tactical doubt remaining, that the swarm of skirmishes is the only form in which infantry can fight to-day. Such absolute and narrow limits are thereby established for the forms in which infantry tactics may be now applied, that it seems a matter of indifference whether the infantry beyond the immediate zone of combat act in line, column, or single-rank platoons. But even in this direction there exist appropriate formulas dictated by the ballistic results of the firing schools—infantry as well as artillery. Peace valor frequently disregards the brutality of these results, still we need not fear that peace tacticians will be able to undermine that principle which has become dominant everywhere since 1888, mainly through the influence of the German drill regulations, which is, that such tactics only as keep in view warlike conditions are worthy the name, and not those following the usages of one-sided drill-ground routine.

In these controversies between "semblance and reality" the infantry is most concerned, for to it falls the lion's share of the combat as well as of sacrifice and it ought to be a matter of course to familiarize it in peace time with such methods only as can be followed in the field. It is not sufficient to practice tactics; these tactics must be entirely suited to the infantry for it has to solve its combat problems under far more difficult conditions

than any other arm. Besides, victory or defeat of the infantry, is equivalent to victory or defeat in a wider sense. The days are passed beyond recall when a victorious cavalry can turn the fortune of the day after the defeat of the infantry. Nor is a superior artillery capable of it, even if it sacrifice itself, as did the Austrian artillery at Koeniggraetz.

The general import of the tactics of infantry as the decisive arm results from these conditions and any officer reporting on the tactics of his arm must so frame his report that neither arbitrary one-sidedness nor scientific argument impair the true nature of tactical reality. This accuracy may best be secured, on the one hand, by giving due consideration to the intellectual efforts which are displayed in the field of infantry tactics and chiefly manifest themselves through the medium of literature, and on the other hand by mentioning the more palpable features, in so far as they are important, of the practices pursued in tactical training.

In tactical matters theory and practice must go hand in hand, if for no other reason than that some theoretical consideration underlies any practical action. Tactical action has never been anything but the result of certain theories which, in time of tactical decline, smack of the drill ground, and in time of tactical advancement are based on the battle-field.

A report on the state of infantry tactics at the end of the year 1893 should, therefore, exhibit the nature of the tactical germs which come to the fore in theoretical shape, because from these germs practical deductions are made for the future development of tactics.

For this purpose a separate discussion by armies—as has heretofore been done—seems advisable, because in spite of the almost complete uniformity in tactical views and tendencies, there are naturally different shades of view in different armies, and because tactical advancement cannot be the same everywhere, for the base, from which the start was made, was not a common one.

A. Germany.—As concerns freedom of tactical action, the German infantry with its drill regulations of 1888 has taken the lead and maintained it during the year of 1893. A glance at the foreign military literature—more particularly the French—meets everywhere with the desire for closer approximation to the German model in two directions. One is the simplicity of form characterizing the tactics of the German infantry, the other is the tactical independence of leading.

The individual training of the infantryman continues to be regarded in Germany as the basis of all tactical training and if it is objected to here and there, that in this individual training too much value is placed on drill and parade and that "German pedantry" is too predominant, it may be stated in reply, that the purely mechanical part of the man's training must receive attention, not as the ultimate object, but as a means for inculcating discipline and military habit. Where this attention is not bestowed, it is in direct opposition not only to the spirit, but to the letter of the drill regulations, which require expressly "that nothing be taught on the drill ground, that would have to be unlearned on the battle-field."

On the other hand, based on claims for things warlike, there is a certain reaction in German army circles against too great tactical freedom on the

part of inferior leaders, which freedom is, in foreign circles, considered a point of special excellence of German tactical habit.

This tactical independence of leaders of all grades, advocated on the one hand and condemned on the other, is, in Germany, of historic development, and this circumstance ought to be taken into consideration without, on that account, agreeing with all the sequences of this development.

The Prussian, and afterward the German, army were the first of all to make the exercises of troops resemble war as much as possible and to promote above all the tactical eye of the leaders and their power of forming a quick resolution. The result of this tendency was a preference for "minor tactics," the so-called "detachment war," to the neglect of the tactical requirements of the pitched battle, so different from those of the detachment war. But as in war great battles decide the final victory or defeat, there is some danger in yielding, in time of peace, to tactical habits and views which are not always in accord with the requirements of battle tactics.

The continued use of the detachment war as a means of tactical training is apt to confuse the conception of the extent of front, battle space, producing thus tactical situations which prejudice uniformity of tactical action. It is but natural that doubts as to the soundness of the excessive application of the principle of the leader's tactical independence, should first arise in the German army, where this principle has prevailed longest. These doubts, which, within certain limits, are tactically well founded, were summed up by General of Infantry von Scherff, their most penetrating and experienced advocate, in a number of writings, the most prominent of which appeared in 1893.

It is sought, at home and abroad, to minimize these doubts and tendencies, which have many advocates in the German army, and thereby to insure greater uniformity of the tactical action of infantry, and to deny their right of existence by the statements that under modern battle conditions the so-called normal attack is a tactical impossibility and therefore injurious to tactical improvement. This is not the place to discuss that question; we feel at liberty, however, to express the opinion that like or similar tendencies will surely arise in other armies, when tactical requirements, perfectly justified in themselves, such as "the initiative and independence of the subordinate leader," are made watchwords without regard to the fact that in tactics as in other things this same condition is not suitable for all armies.

The impartial observer must also concede that during the great autumn exercises of this year, which in their planning exhibit everywhere a thorough appreciation of warlike action, the just mentioned tactical habits of the detachment war manifested themselves several times, where they might have produced injurious results, *i. e.*, in the combat of higher units. They showed themselves in the choice of combat fronts which did not always bear the proper relation to the available number of troops, or in an infantry regiment's occupying a space suited for a division, and in an excessive economy of forces not always corresponding to present tactical requirements. The infantry combat needs broad fronts because only then is it possible to put in action, from the very beginning, as many, or more rifles

than the opponent; otherwise the struggle for the superiority of fire is apt to become an unsuccessful one. In view of this tactical fact the principle of the "deep formation," which is particularly emphasized in the German drill regulations, must suffer appropriate limitations.

Such critical remarks on the great exercises of the German troops in 1893 are mere matters of information, since the mania for excessive extent of front and corresponding dispersion of troops has been emphatically checked by high authority.

Cyclists were extensively used during the autumnal exercises. The results proved satisfactory and the infantry in particular expects considerable advantage from a more extensive use of this kind of service in the transmission of reports.

The experience as to the tactical usefulness of reserve cadres, which were called out by several army corps during the fall manoeuvres of 1893, is similar to that of former years and of other armies, except the Austro-Hungarian army which is more favorably situated in this respect. The difficulties in the way of the tactical proficiency of such troops are not of a purely tactical nature, but lie in the field of organization and, above all, of physical strength, which leaves much to be desired. This shows *ad oculos* the intimate connection between the tactical utility of infantry—it is less the case with the other arms—and the question of organization, armament and equipment.

Considering the character of the enormous armies of to-day, the infantry of which must be more or less improvised in case of war, a good deal of the peace training will, for obvious reasons, be lost, and the effect of loss on the tactical value of these troops cannot be a beneficial one. With the German infantry this evil is relatively smallest on account of the larger number under the colors in peace time, but it will be all the more serious with the formations of the second line. Military reform of the past year has, it is true, by the formation of fourth battalions, done much toward strengthening these cadres in case of war as regards organization and tactics; but the tactical value of reserve infantry troops can be materially increased only by radical changes in equipment and armament. This question seems more important for the heavily loaded German infantry than many a tactical consideration. Infantry tactics must to-day be practiced under the most difficult circumstances and by men on whose lungs and legs, deliberation and coolness under fire, great demands are made.

This requires a certain spiritual balance, which, however, is sensibly disturbed by excessive physical fatigue. To reduce the latter as much as possible by a decrease in the weight of clothing and arms is, therefore, a question of great and direct tactical importance. There are indications, however, that the efficiency of the German infantry will be increased in the near future in this direction.

The introduction, in 1893, of two years' service in the German infantry has had no influence on the course of the tactical training of the troops. It was not only among the authorities, but among the troops themselves, that the belief had prevailed for some time, that, in view of the intense and well considered course of training of infantry in the German army, two years

sufficed to fit the soldier for modern war from the military as well as from the tactical standpoint.

The adoption of the two years' term of service has even tended to increase an advantage of great tactical importance in which the German infantry has heretofore excelled all other infantries. The peace strength of the German infantry company has been raised to a minimum of 150 men. This means not only a tactical training and employment more nearly approximating warlike conditions than that of any other infantry of the continent, but also a notable advantage in tactical reliability of the infantry in war. These points must be considered in estimating the tactical value of the German infantry.

The regulations have not been changed in 1893. The time for alterations in the drill regulations has been postponed, new firing regulations have however been published for the infantry. They do not contain material changes of principle; the change, in the main, consists in adapting the firing conditions and firing classes, heretofore calculated for a three years' course, to one of two years. We cannot refrain from mentioning, however, that voices are heard in the German infantry, which, in conformity with the principle of warlike training expressed in the drill regulations, demand its appropriate application in the firing regulations also. Infantry tactics to-day means simply—shooting! If tactics mean and are meant to be warlike, shooting must be so too. This logic cannot be controverted. Nor is it plain that shooting as a mechanical accomplishment is based on certain mechanical conditions which the marksman must be taught systematically. That can be done at the short ranges only. The infantryman's efficiency in firing is, to-day, tactically utilized at distances lying between 500 and 1000 metres. It is also utilized against targets which bear little or no resemblance to those on the range at short distances. Lastly the infantry combat of to-day demands independent marksmen, while, with our present system of musketry, the marksman is so much instructed and supervised as to impair his independence.

With these points in view those voices call for a training in musketry which will better fit the infantryman for his tactical employment in the fire fight, than for marksmanship against unwarlike targets and at unwarlike distances. The present system of musketry undoubtedly lays more stress on correct musketry training not so useful in war as generally supposed; hence the demand for another system seems well founded from a tactical point of view and in the interest of tactics.

B. Austria.—Heretofore the tactical training of the infantry was hindered by the small peace strength of the companies. Though in the fall manœuvres the strength was increased—in 1893 to 130 men per company—it was but a temporary remedy for a tactically defective organization. The year of 1893 brought an improvement in this direction since in the future the normal strength of the company is to be increased by 9. If we consider, however, that even then it will rarely be practicable to have platoons of ten files, constantly, during the period of the training proper, it appears that the Austro-Hungarian infantry will, even after this increase of strength, be hampered by difficulties in its tactical training. This is felt most of all

in the Austro-Hungarian infantry. In all grades of this arm an extraordinary struggle for tactical improvement is going on, to which a brisk literary activity bears testimony.

In the year 1893 tactical tendencies manifested themselves in the Austro-Hungarian army coinciding with those of Germany. The normal attack likewise plays a rôle in the tactical discussions. In the main, however, the drill regulations are deemed satisfactory in high infantry circles, as regards "tactical independence," as well as "closed tactical action."

In respect to the latter point, particularly, the fall manoeuvres of this year near Guens have proven that the imperial army has made great strides forward in the warlike employment of great bodies of infantry.

It is no exaggeration to say that in point of plan and execution these manoeuvres mark an epoch in the history of infantry tactics. The course of the "planned battle" was there practised and demonstrated from the standpoint of battle tactics and not of detachment war. All experts are agreed that on the days when twelve divisions confronted each other, the approach, deployment and employment of the large infantry units were excellent.

If here or there something occurred which the tactical critique does deem unobjectionable—for instance the isolated advance of a brigade of the North Army on September 19, to occupy a so-called advanced position, which had to be abandoned under tremendous losses, *i.e.*, an initiative which does not seem to fit in the frame of the whole—we may say, that such things happen in the best schooled and best led army; besides it could not impair the excellent impression, of the tactical efficiency of the principal arm in point of training as well as of leading.

Under the personal influence of the Archduke Albrecht much stress is laid in the Austro-Hungarian army on closed tactical action of infantry, and the great experience in war of that illustrious leader was certainly not without influence herein, for the lessons of war history point out, that in the carrying out of the infantry combat those influences which impair tactical coöperation are to be diminished as much as possible. The disintegrating influence of the modern combat in itself impairs this coöperation a great deal, a thing which cannot be illustrated in the peace exercises. The more obligatory is it our duty, therefore, as regards forms and the application of forms, to inculcate precepts and habits which diminish or delay this process of disintegration.

To preclude any misunderstanding as to the tactical action of the Austro-Hungarian infantry, we will remark at once, that neither fixed rules or forms for the carrying through of the combat are concerned here—that would be contrary to the drill regulations—nor any kind of shock or mass tactics, but the correct execution of a well defined principle which may be expressed as an endeavor to keep the units together and to throw forward the fighting troops as near together in point of time as possible, because in this way alone can the foundation be laid for gaining the superiority of fire on a grand scale.

To this end and to secure tactical composure intimately connected with these ends, a formal expedient is used in the Austro-Hungarian infantry,

the volley. Whether this means will prove as efficient in war for insuring tactical order as it does beyond a doubt in peace, is an open question. As a matter of fact the use of the volley is looked upon by other armies as exceptional. The experiences of the last wars seem to confirm this view.

The marching powers of the Austro-Hungarian infantry deserve especial mention, not only that of the line but also of the landwehr called out for the manœuvres, and the splendid tactical utility of the latter.

The very practical adjustment of the infantry knapsack, no doubt contributes much to the marching power. The satisfactory state of tactical efficiency of the landwehr troops, which in this respect seems to excel other armies, may have been largely brought about by the fact that the Austro-Hungarian landwehr infantry has an organization and system of training excelling similar systems in other states. Active military functionaries are permanently attached to this landwehr and it is therefore conceivable that with their firmer organization these landwehr troops also possess greater military efficiency altogether. These points should be taken into consideration in placing an estimate on the value of the Austro-Hungarian landwehr infantry.

C. France.—Though the French drill regulations appeared one year later than the German, it is not infrequently stated in France that these regulations do not conform to modern requirements as closely as do the German regulations. This view became also manifest in 1893, not so much in literature as in the scientific conferences [probably Lyceums, Transl.] which in France stand in great favor and repute. In France as everywhere else, there is a tactical contention between the adherents of tradition, which in matters military is frequently synonymous with formal routine, and those who deem greater tactical independence indispensable, because, they assert, modern combat has no room for tactical formalism during the main phases of the fight.

It must be conceded that among all drill regulations the French—nearest to them in this direction are the new British drill regulations—smack most of linear tactics. The so called school of the battalion is, according to German notions, still very complicated. The French infantry practice forms and formations on their drill grounds which can hardly be called "war-like." The French infantry also has a so-called "normal attack." The more or less official advocates of the regulations deny this in pointing out that the tactical precepts leave full liberty in every direction and emphasize the independence of leading, which, they assert, in itself precludes fixed forms. On the other hand it is asserted, that in practice the more precise precepts of the regulations are accepted as the standard. Clausewitz in his time pointed out that in no army had such a pronounced methodism always prevailed as in the French.

We can but sketch here the tendencies which manifested themselves during the past year in the way of tactical wishes. These wishes in part assumed the shape of formulated demands, and this is of value inasmuch as only positive demands can be positively criticised.

The opposition to the tactical system of the "petits paquets" is pretty

general, this has small supports, large supports, etc., following in rear of the skirmish line. Translated into tactical German this means "fighting in deep formation," which has already been discussed in another place. Not only the theorists but also the tacticians beyond the Vosges demand, that the system of "petits paquets" be definitely done away with, and that the combat be begun with a sufficiently deployed front.

This view cannot but be concurred in. Leaving aside the fact that it will never be possible in this manner to wrest the superiority of fire from an opponent who is well led and deploys a strong firing line from the beginning, it seems questionable whether these supports, echelons, etc., which are supposed to reinforce the firing line in front, will be able to serve their purpose. They not only serve as targets, thus representing a capital which not only does not bear interest but is constantly diminished, but it is reasonable to doubt whether in the fire fight it will be possible to bring them into the front line without enormous losses. Such a method cannot possibly be called "tactical economy."

The objection frequently urged that firing lines, dense from the start, suffer too much loss, has been proved untenable by the results of official experiments according to which the percentage of loss of dense firing lines is no greater than that of thin ones. This would seem to settle for good the tactical controversy that, tactically, a dense firing line is, under all circumstances, to be preferred to a thin one, because the former brings more rifles into action and is therefore better able to gain the superiority of fire—the end and aim of all tactical action of infantry.

Objections are also raised against too strong advance guards, as favoring a dispersion of force and rendering the simultaneous deployment and advance more difficult. The deployment from deep formations, by successive advance of infantry echelons, is here and there objected to, and in its place is demanded a simultaneous approach and deployment of several columns which enter into the fight of the first line abreast of each other. This tactical tendency, striving on the one hand for uniform effect and on the other—after the manner of cavalry tactics—for an application of greater force in the first stages of the combat, is intimately connected with the further desire to apply this principle habitually in the order of march of the troops.

This same tendency has been splendidly represented during 1893 in the field of literature by an extensive dissertation of General Lewal, who, with General Ferron, stands in the front rank not only of the French but of all modern tacticians and whose expositions, endeavoring as they do to meet the practical requirements of war, are worthy of interest for this reason alone, aside from the high personal standing of the author.

General Lewal advocates smaller, handier columns, as against the now customary unwieldy divisional and army corps columns. His paper is entitled "Strategie de Marche" and appeared in the current series of the "Journal des Sciences Militaires." For good and sufficient logistic and tactical reasons he expects great advantages from the march by brigade columns with artillery attached, and from the simultaneous use of all available parallel roads and even of specially constructed, so-called column roads. The idea is not new. The linear tactics knew it, Napoleon favored it, and General

Lewal found examples from the war of 1870-71 to support it. General von Scherff also has lately expressed the same idea, applied exclusively, however, to the approach to the battle, and he as well as General Lewal concur in the demand that, from plain tactical reasons, these march and manœuvre movements of large bodies—an infantry brigade of most armies represents in war a fighting strength of 6000 or 8000 men—should receive more attention in the peace manœuvres,

Of propositions regarding formal tactics we will mention that in place of the two rank formation one has been suggested wherein men are placed at double interval, the rear rank marching opposite the interval. It is believed that this would diminish losses and provide a solid formation for the skirmish line. Marching in file of platoons and sections is recommended, which we used to call in Germany "angle worm tactics."

Great tactical advantages are expected from the so-called "sections franches" of the infantry battalions. They are to be combat patrols in the widest sense. Their employment is gaining in favor; they arose from premises similar to those of the Russian chasseur sections.

The great French fall manœuvres do not call for special remark. French opinions as to their course and usefulness differ much; it should be kept in mind, however, that the old and the new school, and, in part the politics of the critics, also raise their voices on this point.

Impartial criticism must concede that the training of the French infantry satisfies all reasonable demands that may tactically be made on an efficient infantry. The marching powers of the French infantry are very good, though some of the individual men do not give the impression of strength that we see in other armies. The French infantry is also very adroit in taking advantage of the ground as individual combatants. Much attention is paid to the individual training—so far as the national characteristics permit. With regard to the tactical schooling of the infantry, from the scientific point of view, such active intellectual efforts are being made as to deserve full acknowledgment.

The spirit of tactical independence which we are used to see especially in the German army, does not prevail in the French infantry—such was the case in the fall manœuvres of this year—and in the planning and execution of larger exercises we frequently perceive an endeavor to produce certain tactical representations, a thing which used to be habitual in other armies also. Great efforts are on foot, however, to remedy these defects—if they are defects, for the friends of normal forms do not consider them defects—as far as the drill regulations will permit. The objections against some of the precepts of the regulations seem to have grown in 1893, and their authors make them with the feeling, that the general development which the theoretical side of tactics have, beyond any doubt, undergone in the French army during the past ten years, should find corresponding practical expression in the near future in the drill and fighting regulations of the infantry.

D. Russia.—The "tactical" controversy respecting certain important questions of fighting tactics is carried on in Russia with great persistency. General officers in high positions participate, and the freedom of speech in expressing personal opinions—no matter whether or not they are in accord

with the prevailing prescribed order of things—lends to these discussions the charm of originality and well directed effort, which cannot remain without result. Their tactics of infantry are for the present in a waiting stage, so to speak, as the armament of the entire army with the new rifle is not yet completed. Though, as just mentioned, a desire for improvement has manifested itself theoretically and practically, still the "demonstratio ad hominem" remains the best teacher. It is only when the infantry has a complete armament and can be convinced of its effect on the range, that a correct estimate of the efficiency of the arm and the tactical deductions flowing therefrom will be formed. The "Annual Reports" for 1894 may be able to furnish news in this direction,

Nevertheless, infantry tactics have not remained at a standstill in Russia during the year of 1893, and one direction, which might be called a "national-tactical" one, has been extensively followed. As national characteristics, politically and socially, are much cultivated in the Russia of to-day, so, in a certain sense, are those of the field of tactics. Efforts are made to put to more extensive military use the Russian's "broad nature" and to eschew "methodism" as much as possible,—for even Suwarow said: "We want a correct military eye, no methodism."

Here, on the field of tactics, however, a difficulty is encountered which cannot be overlooked and which is intimately connected with the national characteristics of the Russian infantry. It is the tactical dependence of the individual man. One of the principal points of excellence of the Russian infantry, its splendid bravery in closed formations, *i. e.*, under the eyes and under the supervision of the leaders, is probably of less tactical utility in the modern combat, which requires more independence on the part of the infantry soldier, and this seems to be realized in Russia. The theory of the "shooting machine" may have much that is attractive, but it failed of confirmation in the reality of the last wars including the Russo-Turkish War.

The same may be said of the tactical valuation placed on practice in night combats, the so-called penetrating attacks. It is perfectly correct to manifest everywhere energy of will, but it is equally correct not to mistake this for the energy of tactical power, more especially as regards the infantry combat. According to the annals of war the Russian infantry has never been found deficient in that energy of will, but the tactical art consists in harmonizing will and power in the face of the realities of the battle-field.

If, as we have stated above, to-day, tactics is, in the main, synonymous with shooting, the warlike tactical training in Russia has been advanced during 1893 by the issue of new firing regulations.

In the old firing regulations great stress was laid on firing under conditions approximating those of war, *i. e.*, firing at small targets at short ranges was preferred. The new firing regulations, which make allowance for the ballistic qualities of the new rifle, adhere to this principle of the regulations of 1889.

The following innovations may be noted. Individual firing at known ranges is extended to 1000 metres, the firing of bodies of troops to 2600 metres. The exercises against small targets have been increased and extended to longer ranges. The conditions for advancement to the first firing

class—there are not more than two classes—have been made more rigorous and likewise the requirements for the award of prizes.

On the whole it must be conceded to the new Russian firing regulations that they have abandoned more thoroughly than others the system of "fine shooting" and that the entire musketry training has been placed on a foundation which the tactician cannot but acknowledge as suitable, inasmuch as allowance is made for the practical requirements of the infantry combat.

E. Great Britain.—The year of 1893 has been of great tactical import to the British infantry as new infantry drill regulations were issued on July 1. So far as known, they have been favorably received by the army and signify great advance in the tactical conceptions of underlying principles which it has been asserted in England were still fettered by the traditions of Wellington. Though, according to continental ideas, the new drill regulations remind one in some points of linear tactics, it should be kept in mind, that the British infantry must be prepared for fighting races against whose methods European tactics would be unsuitable. This greatly increases the difficulty of the task of preparing such regulations for the British infantry.

This task, however, seems to have been successfully accomplished. Infantry circles of the island state approve the demand of the regulations that the tactical training correspond to the requirements of war.

The independent employment of the company in the sense of the German drill regulations is not provided for in the regulations. The battalion is and remains the tactical unit and is more sharply defined as such than in other infantries. The line formation has been retained for the battalion; in addition there is the company front column with whole and quarter distances. The cadence for all movements is 120 steps per minute, the pace 75 cm.

The regulations are decidedly opposed to the normal attack. They state: "Fixed rules of action in moving against the enemy cannot be laid down for the troops beforehand. The arrangements must conform to changes in the situation." Also: "It is impossible to lay down fixed rules for the ever changing situations of war; there is danger lest the forms of the normal attack be applied where they are entirely unsuited. Any combat is subject to so many variations, that each entails on the leader a distinct task, which cannot be solved in advance by one general pattern."

Volleyes play a rôle similar to the Austrian regulations. In accord with British partiality for the tactical defensive, based on national characteristics, it is recommended, even in the attack, to leave a tactical reserve, the third line, in a good defensive position. This may be objected to on tactical grounds, as to insure success in the decisive attack, the last man and the last breath must be employed.

Great value is placed on holding the troops together. The front of a brigade of four battalions is not to exceed 800 m. In the attack the brigade has a depth of 2000 m.

Advanced positions are recommended in defense in exceptional cases only.

It is to be remarked that, based probably on the experience of Tel-el-Kebir, the regulations contain detailed instructions for the night attack. The storming parties are composed of the point (1 officer, 1 non-commissioned officer and 2 or 3 men), an advance guard with pioneers, which follows 150 metres in rear, followed at a distance of 80 metres by the assaulting column proper with three paces distance between ranks and one pace interval between files. In rear of the assaulting column follows, at 300 metres, a support.

The system of autumn exercises has become more and more popular in Great Britain since the Franco-German War, and although, according to continental ideas, the larger exercises of this year under the direction of the Duke of Cambridge—about 20,000 men of all arms took part—have no claim to special military interest, still they have demonstrated, that in England all features and requirements on the field of infantry tactics are understood and appreciated.

THE ROLE OF CAVALRY AS AFFECTED BY MODERN ARMS OF PRECISION.*

BY CAPTAIN W. H. JAMES, *p. s. c.*, LATE ROYAL ENGINEERS.

Aldershot Military Society.

MY intention is not so much to give a lecture as to offer a few remarks, which I trust may provoke a profitable discussion on the many points involved in the subject, on which, in accordance with the invitation of the Military Society, I have been asked to address you.

The subject naturally divides itself into two parts :

I. The effect which modern weapons have on the observation duties of cavalry.

II. Their effect on the use of cavalry in combat.

Under both headings we must consider the effect of :

1. The increased range of field-guns and the introduction of shrapnel shell.

2. The greater range and penetration of modern rifles and their flatter trajectory and quicker rate of fire.

3. The use of machine guns.

4. The effect of smokeless powder.

With regard to the last, which is common to both guns and rifles, its only effect, so far as cavalry is concerned, is that the position of troops or even of individual men is no longer indicated by the smoke from their weapons. It is thus harder to tell the direction from which projectiles are coming, and if the troops firing them are hidden, almost impossible to ascertain accurately the force of the opponents.

Dealing with the first of the above sub-heads, there of course cannot be any doubt that the introduction of shrapnel has given the artillery a more

* November, 1894.

powerful projectile for use against masses of cavalry at distant ranges. But, I am somewhat inclined to think the old smooth-bore was more efficacious within "grape" ranges, *i. e.*, from 600 yards and nearer. The effect of a round shot and case is well exemplified in Mercer's description of the fire of his battery at Waterloo.

It is, however, doubtful whether we need consider much the effect of artillery against cavalry, certainly not when the latter is reconnoitring, and even in the cavalry fight the mobility of this arm prevents its offering for any lengthened period a favorable target to guns.

So far as the rifle is concerned, cavalry will suffer now up to 1200 or 1500 yards; while at distances of 300 or 600 yards, modern infantry fire becomes positively annihilating, for, in addition to rapidity of fire, the modern bullet goes through three or four men or a couple of horses.

With regard to machine-guns, I think if we look upon them as representing concentrated infantry fire, they will not materially affect the argument.

What will be the result of these improvements on the uses of cavalry in future war?

I will first of all deal with the effect on cavalry reconnoitring, which is divisible into—(1) the exploration of country; (2) the reconnaissance of a position. The first is rendered doubly difficult by the longer range of weapons, and by the fact that there is no smoke to disclose the number from which the fire comes. Hence the cavalry patrols will be more easily stopped, because they will not be able to ascertain with such facility the force opposed to them. The *unknown*, which plays so great a part in war, will be more powerful than ever. It is evident that to prevent the committal of the force in any particular direction, the patrols in front, themselves, should be small and as few as may be, and should be sent out from fairly large bodies (squadrons) in the exploring line, which will then have considerable fighting capacity, which is necessary to penetrate the enemy's screening line. As von Rosenberg remarks, "the tendency at manœuvres is to employ large patrols to avoid being put out of action by the umpires, while in real war officers prefer small patrols because they are less visible to the enemy. " But, whether small or large patrols be employed, it is essential that they should have an efficient fighting line behind them. It would not do to say because the German cavalry in the 1870-71 war was at times disseminated, that, therefore, it would be safe to do so again, because we must remember that the French cavalry made no effort to stop their opponents. In the future it is perfectly certain that there will be collision between the two exploring lines of cavalry, and that that one will win which is best organized for offensive fighting purposes.

The formation of a cavalry division acting as a screen would be something as follows:

One brigade, with the mounted infantry, machine-gun section, one battery, and the engineer detachment, would be pushed on to the front; the remaining brigade, with the other battery, being kept in reserve about two to four miles in rear, according as the country is open or close.

The leading brigade, keeping one regiment with the mounted infantry

and auxiliary arms in second line, would send on, one to three miles ahead of it, the other two regiments, which would act side by side, but at some distance apart. Each of these would, while keeping one or two squadrons in support, send on the remaining three or two squadrons one to three miles more to the front. These "advanced" squadrons, would furnish patrols for exploring.

With regard to the reconnaissance of troops in position, it is evident that mounted men will have to keep at a greater distance than before, and that they must approach on foot for detail observation.

It seems certain, therefore, that much more use will be made of dismounted men in the future. Cavalry can, of course, be trained for this purpose, but so long as we have mounted infantry attached to the cavalry division, it is evident that they may be well used for this duty. They are not on the whole so valuable in war, as they cannot perform the mounted duties of cavalry, and it seems better, therefore, to employ them for these close reconnoitring duties rather than to use up the cavalry.

I should be sorry if my remarks were taken as suggesting in any way the belief that we should return to that hybrid personage, the Dragoon, who, to use Dr. Johnson's words, "fought indifferently on horseback or on foot."* I believe that to use cavalry dismounted, on a large scale, would be the death-blow to the true cavalry spirit. Of course instances will occur in war in which men must quit their horses for fire-action†; but, where large numbers are concerned, I submit that mounted infantry is the arm to use.

How easy it is for troops to be ignorant of one another's presence was shown before Königgrätz and at Solferino, in which latter instance, the two armies practically tumbled one on the other. Again, to faulty reconnoitring by the German cavalry was due largely the mistake made as to the position of the French at Gravelotte.

So far for the observation duties of cavalry; and now let me deal with the cavalry combat.

I do not propose to discuss the action of cavalry against cavalry, beyond saying a few words as to the rôle which may be played by horse artillery. I venture to suggest, that while guns are necessary for use in the advance duties of cavalry, they are of very little utility in the actual fight between opposing bodies of horse; nor do I believe that there are many, if any, examples of artillery being used in this manner. The fact is, cavalry charges are so sudden and so soon over, that the guns have rarely time to act. To quote the words of Kellermann, with regard to his decisive charge at Marengo, "I see them, I am in the midst of them, they lay down their arms"; here was no time for horse artillery, and their interference in the pure cavalry fight is, in my belief, the idea of the theoretician.

If this view be admitted, it is evident that, as the guns are otherwise required for preparatory fire-action of dismounted cavalry, or mounted infantry, or to beat down material obstacles, it would be desirable to have considerable shell power, rather than to sacrifice this to mere mobility; *i.e.*,

* The word "indifferently" is of course used in its Johnsonian sense.

† A very good example is that of the 14th French Dragoons at Spicheren.

the horse artillery gun should carry as heavy a projectile as that of the field artillery, but might be lightened by being made shorter, taking, therefore, more the form of a howitzer. This is already done in Russia, while Germany has only one calibre for horse- and field-gun alike.

With regard to the action of cavalry on the battle-field there are, I think I may say, two schools. The one considers that cavalry should act in masses as in the days of Marlborough and Frederick; the other believes that, while small bodies may still be employed in the actual lines of battle, the action of masses must chiefly be confined to the flanks of the latter. Personally, the second view seems to me to be the correct one. Large masses of cavalry require large fronts to act on, and it is difficult to imagine where the necessary space could be found. Of course it is possible that in the collision of large masses numbering many army corps on each side, such as will meet in conflict in the next Franco-German war, available intervals may occur, but in such cases the action of the cavalry would really be one against the flanks. Moreover, a great deal would depend upon the nature of the country. That which is possible in the open plains round Metz would be quite out of the question in the south of England, where ground available for the mass action of cavalry could rarely be found. On the other hand, experience shows that even small bodies of cavalry may have a great influence, e.g., the cuirassiers at St. Quentin, and the Lancers at Vésoul.

Wide out-flanking movements ably led by an energetic cavalry commander, especially when combined with horse artillery and mounted infantry, as in the English Cavalry Division, will be capable of producing the greatest results, carrying confusion into the rear of the enemy, and materially aiding the efforts of their comrades struggling against the enemy's front.

The great opportunity for cavalry on the modern battle-field will be the attack of the large mass of guns with which the force on the offensive will seek to cover its deployment and batter the points selected for attack. These guns will usually be supported only by small forces of infantry; cavalry boldly led against them may produce a decisive effect.

- But yet another task remains for the mounted arm of the service—the completion of the victory, by acting against the retreating enemy, turning his defeat into a rout. As a practical fact pursuits from the battle-field have been rare. Even after Waterloo there was not so much pursuit by the Allies as flight by the French; the actual pursuing force was really only two regiments of cavalry, and portions of two of infantry. The pursuit after Jena, and that after the battle of the Katzbach, are, however, capital examples of what may be done by energy. In the future there is no doubt we shall see pursuits largely made use of; modern war is so costly and destructive, the numbers engaged in it are so enormous, the paralysis of civil life is so great, that every means will be made use of to shorten struggle; and hence it will always be an object, not merely to defeat but to destroy the adversary. For this purpose cavalry must be freely used.

I think what I have said proves that I am certainly not one of those who believe that the days of cavalry are past. On the contrary the future will offer as many opportunities for brilliant action as in any past war. Explor-

ation, accurate reconnaissance, is more than ever necessary, with the increased strength of armies and the long lines of battle. The size of forces renders them particularly sensitive to their communications, against which the wide out-flanking movements that I have suggested will act with great effect, while on the battle-field itself opportunities will still be afforded for brilliant leadership and gallant following. The modern rôle of cavalry may be a somewhat different one, but its importance in determining the fate of armies and of nations is as great as ever.

Let me now say a few words on organization and training. All organization must start with the squadron. Ours numbers about 100 men in the ranks, whereas foreign nations usually have about 150. Except in Austria, cavalry regiments take the field four squadrons strong. Our regiments, therefore, are weaker than foreign ones, and our brigade of three regiments about the same numerical strength as the foreign of two. If the brigade be regarded as a fighting unit, the composition of three regiments seems a better one. Our division has two brigades, foreign ones usually three. If we adopt the strong first line advocated by the Germans, and which is an inheritance from the days of Frederick, or indeed of Cromwell, the two brigade division is a handier formation. But if the three equal lines are to be employed, in accordance with the views of the French school, it would be necessary in our case to split up the brigades in the cavalry division. There is much to be said on both sides, but it is a purely cavalry matter, which I leave to cavalry officers.

A good cavalry must be based on well trained individual cavalry men, *i.e.*, trained men on trained horses, and unless the latter are properly broken and the men taught to ride straight, that uniformity of pace and cohesion which constitutes a perfect cavalry cannot be obtained. The distances which now must be traversed at a rapid pace are so much greater, that training of the highest class, both of men and horses, is more than ever necessary. To fill up a regiment with raw unbroken horses on the eve of war is to ruin it for cavalry purposes. Taught by the experience of the 1866 war, the Germans now take the field with trained horses only. We must do the same. Unless a horse is properly trained so that he stands square in the ranks and moves with regular paces, he is not a charger. Moreover, our cavalry must be kept together and trained in larger units than the regiments. We have been too apt in England to look upon our cavalry as a superior mounted police, and to station them in quarters where proper military training is impossible. So far as exploration is concerned, that can be taught in almost any locality; but instruction in fighting is only possible where ground is available.

With proper organization and right training able leaders will be produced, qualified not only to lead but to instruct their men. Uniformity of speed is an absolute necessity for a proper shock. When "the charge" becomes a signal for disorder, a regiment is not properly in hand. A well ordered charge is like the rolling of a ruler across a chess-board.

May I say a few words on rank entire, and on the use of fire with cavalry when charging. Wellington, and most of our cavalry leaders at the beginning of the century, believed that the second rank was useless. Its abolition

undoubtedly requires high training; but is it not possible that, opposed to modern fire, the second rank may serve only to augment the losses?

With regard to the fire question, I stated earlier this evening, that in my opinion, there is not much opportunity for artillery to act when cavalry are charging. Might not machine-guns, mounted so that they need not necessarily be unlimbered when used at short ranges, be productive of great effect?

Another proposition I would make for your consideration is, would it not be practicable to use a revolver troop of some 40 or 50 men, who just before collision took place between the first lines, could gallop out and take up a flank position, opening fire against the enemy?

Lastly I would draw your attention to the question of dress. It should of course be practical and adapted for the purposes of war, but its color should be distinctive and easily recognized. Personally I am in favor of the English color—red.

And now, gentlemen, I must conclude. The British cavalry has many glorious traditions of the past; if properly dealt with it will maintain them in the future. An arm which has won the admiration of such excellent judges as De Brack and Bismarck must have in it the elements of greatness. These have only to be cherished and cultivated to insure that in the day of trial it may be worthy of its ancient reputation.

DISCUSSION.

Lieutenant General Keith Fraser, C.M.G., Inspector General of Cavalry, said : Captain James has discoursed most ably on the subject of cavalry. We have indeed good reason to be proud of our own cavalry, which I am confident would hold its own against that of any other nation. Notwithstanding the fact that arms have gone on improving with the advance of time, the action of cavalry on the battle-field is universally admitted to be of at least as great value as it formerly was. The range of firearms had greatly increased from the days of Cromwell down to those of Wellington, but I wonder what, if any, material difference there would have been if at Waterloo the infantry had had such a rifle as we now use, remembering that the undulating ground sheltered the cavalry till within a short distance of the former. The effect now no doubt will be that in future cavalry will have to be kept during an action till its services are required, further out of the reach of fire, and must be able to cover longer distances at a more rapid pace than formerly. In regard to mounted infantry, the question of their being attached to the cavalry division is a much disputed one. I entirely agree in the opinion of the present Adjutant-General, who is one of the highest authorities on this branch of the service, when he said in this room on the occasion of a lecture by Lieutenant-Colonel Hutton, in 1889, that he would take exception to mounted infantry being attached to cavalry. Personally I cannot see the use of cavalry carrying tons of weight in carbines if they are not considered fit to use such weapons. My opinion is that cavalry can do anything that mounted infantry can do, and do it much better. Mounted infantry are certainly not a proper force for patrolling duties. That is distinctly part of the rôle of cavalry. Mounted infantry horses are only intended as a means of conveyance. I will quote a few words from a letter on the subject which I have received from Heros von Borcke, author of "Two Years in the Saddle," a book probably known to you all, "the reading of which would make any cavalry soldier's heart beat fast," as Prince Kraft puts it. He was chief of the staff to the famous Confederate General Stuart. He says : "The mounted infantryman will regard his

horse as good enough to suit his easy locomotion and very useful to carry him out of a dangerous position"; and he adds: "If I was ordered to hold a very important position at all hazards with mounted infantry, I would in the first place have the horses shot to deprive the men of the *arrière pensée* that they were near for their salvation." I am entirely in favor of three brigades of two regiments to a division, and I consider that two or three batteries of horse artillery are indispensable to a cavalry division. Although Captain James has alluded to Marengo as an instance of cavalry success without the help of artillery, we should not forget that in that battle some guns were forthcoming at the right moment and paved the way to the charge. As regards the idea that cavalry will not be able to work often on a wide frontage, we must not cramp our minds because our terrain in England may be cramped, for we may yet have to fight on the broad plains of Asia, where extended lines would be required and great bodies of cavalry would necessarily be used. We are indeed at a terrible disadvantage in the matter of trained horses. In Germany cavalry horses have two years' training and are six or seven years old before they are put into the ranks, and with them good equitation is placed foremost, and cavalry on horses not thoroughly trained is deemed worthless. As regards rank entire it is quite true that the Duke of Wellington was against it, but he was never a cavalry soldier. It is a standing principle of cavalry drill that the frontage of squadrons, regiments, and brigades should be preserved, and the object of the second rank is to fill up gaps in the front rank as they occur. It is only those who have no experience in command of cavalry who would advocate the constant variation in the frontage of squadrons which the abolition of the rear rank would entail.

VULNERABILITY AND ARTILLERY FIRE.

Translated by FIRST LIEUT. J. A. LEYDEN, 4TH U. S. INFANTRY.

IN discussing attack formations of infantry,* a French officer describes the effect of artillery fire upon line and column in substance as follows:—The shell, which will be used in great measure against infantry, consists of a number of balls or fragments symmetrically and homogeneously arranged around a central space in the projectile. The effect of placing the bursting charge in front or in rear of the fragments is simply to diminish or increase the remaining velocity of the balls or splinters at the time of bursting. After the burst the separate projectiles will follow trajectories symmetrically arranged about the axis of the cone or sheaf. This sheaf of trajectories, at its origin, is a right cone, and if it be cut perpendicularly to the axis by a plane the section will be a circle in which all the splinters and balls are uniformly arranged. If now we consider two diameters of this circle, one horizontal and the other vertical, we find that the number of fragments is the same on each side of either diameter.

Those below the horizontal diameter would strike a deployed line of infantry a little in front of the line CD of the diagram. Those on the vertical diameter would strike the same body marching by the flank in a column of files or twos.

The elements of the cone striking the ground under very acute angles of fall, will, for normal height of bursting, give a length of 25 to 30 metres.

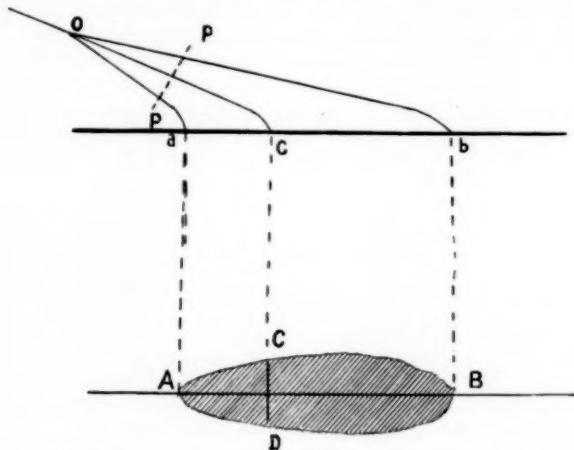
* *Tactique de Combat de l'Infanterie*, par G. G. Paris: L. Boudoin & Cie.

to the diameter CD. While for ranges between 2000 and 3000 metres the diameter AB will be about 250 metres.

If then a half section of 30 men marching towards the enemy in a deployed line, in single rank, finds itself a little in front of the line CD, it occupies regularly a front of 21 metres, and will, consequently, receive nearly the whole of the fragments found in that semicircle. If on the contrary it is found marching by the flank in column of files, its head on the same line, it occupies a depth of 30 metres, owing to lengthening out, and it will receive only the fragments on the diameter AB.

It is clear then that in advancing, the vulnerability of a thin column, in one or two ranks, is but a small fraction of that of a line formation, in either single or double rank.

I deduce from this that in advancing, on open ground, towards an enemy, an infantry battalion ought to have the sections of its two leading



companies in thin column marching by the flank, the heads of these columns on the same line and separated from each other by intervals of 35 to 40 metres. The other two companies of the battalion in the same order, following at a distance of about 300 metres; the sections of one battalion following the corresponding sections of the other, in order that two sections in the same axis of artillery fire may not be struck by the same shell. The columns being separated far enough to allow the entire sheaf of projectiles to strike between them.

If a company commander sees a ranging shot burst in front of his troops, the best way, and indeed the only way, of avoiding the volley which will follow, is to immediately put his company in double time to gain cover to the front, or at all events to gain as much ground in that direction as possible.

The march in short thin columns is only advantageous within the zone of artillery fire proper, or to the vicinity of 1200 metres from the enemy,

after that infantry fire must be taken into account, and for that fire the deployed line is least vulnerable.

Continuing his discussion, the officer criticises severely the drill regulations of his service, particularly concerning the supports of the firing line. (The critique was written before the last autumn manœuvres.) Why not put every one, of the leading companies, into the line from the start? The captain's position being between the supports and the line is bad for giving orders or seeing them executed. The company deployed in its entirety at once offers this advantage that the captain exercises immediate control throughout the action; the company can utilize at once all its rifles; the subdivisions run little risk of mixing up; and all the troops are much better in the hands of their leaders, a most important point.

Concluding he says: Smokeless powder has made everything clear; clearness means simplicity. Let us then suppress these deployments, reinforcements, and successive rushes, now so well regulated that officers apply them under all circumstances, and upon all grounds. Let us suppress these little groups which move behind the line and serve for nothing unless to receive bullets that have missed the firing line, which diminish cohesion, render command impossible, increase the losses and the final disorder. Let us suppress these firings with counted cartridges which follow each rush and serve for nothing but to burn powder and to render the advance less assured. Let us make use on a large scale of well-aimed volley fire at long ranges, and at the short distances of very violent individual fire but only during prolonged halts and when the men see the object clearly: Finally a resolute, energetic and sustained march without fire, to arrive at close quarters. Above all no more defensive as it is now understood. Let us have more confidence in our captains; let us give them more initiative; let us force them to think, and by study of the most varied ground to deduce their parts in the diverse circumstances of war.

EFFECTS OF INFANTRY FIRE.

BY CAPTAIN DANRIT, FRENCH ARMY.

Translated by FIRST LIEUT. F. P. FREMONT, 3D U. S. INFANTRY.

FORTY years ago, the infantry musket discharged a ball weighing 27 grammes with a powder charge of 9 grammes; the calibre was 18 mm. The effective range was 200 metres. At 300 metres, its accuracy was less than that of the model of 1886 at 1800 metres; nor would its projectile go through the body of a man except at an exceedingly short distance. A well-drilled soldier could fire three shots in two minutes and a supply of thirty cartridges per man was sufficient for a day's battle.

To-day, the magazine rifle of 8 mm. calibre fires a bullet of 14 to 15 grammes with a powder charge (smokeless) of 2.5 grammes. Its effective range is 2000 metres; the maximum range under an angle of 32°, is 3500.

REPRINTS AND TRANSLATIONS

metres. At three hundred yards the projectile will go through the bodies of four men placed one behind the other, and renders useless a shelter trench of 60 centimetres thickness. The average soldier fires without trouble 12 to 15 shots per minute and there is provided for him, in an army corps, a supply of 300 cartridges.

Briefly stated, the model of 1886 in comparison with that of 1853 "carries six times as far, shoots ten times faster and strikes five times harder." And yet, half a century before this antique model of 1853, Napoleon the first said of the gun of the year IX. (1800) "that it was the most powerful implement of war that ever aided man."

The French armament, the work of the Normal School of fire and of its late regretted chief, Colonel Lebel, as well as of Colonel Bonnet, one of the principal chiefs, and of the inventor, Veille, who gave to it the smokeless powder, is to-day the equal of any adopted by the great European powers.

From 1886 to 1892, all armies were furnished with rifles of various small calibres, ranging from 7 to 8 mm. and firing a bullet enveloped in nickel, "maillechort," or copper, with an initial velocity of at least 650 metres a second. The sights are graduated to 2000 metres. All the rifles are of the magazine type. The trajectories are equally reduced and sufficiently flat to strike a man standing at 600 metres—or at any intermediate point—from the firing point. In a word, if to-morrow, the spark that is flashing up, now in Morocco, now in the Balkans, now in Africa as well as in India, sets old Europe on fire, the work of destruction accomplished by the rifle of the infantryman will be everywhere equally terrifying.

And a new and more powerful rifle may at any moment appear! It has already appeared. There are trial guns of a still more reduced calibre, about 6 mm. For as soon as a certain type is adopted, experts immediately commence experimenting with the one to follow. These coming calibres fire a bullet with 800 metres initial velocity. They will permit of collective firing at three kilometres (3281 yards), and their extreme range is extraordinary. They may not be adopted, by the great Powers at least, for these are already weakened by an effort, continued during twenty-five years, and have not 200 or 300 millions to throw as food to the Minotaur of "peace armament."

How will the attack of a position be carried out? What will happen to the company which with bared breasts treads what the Russians at Plevna, in 1878, called "the zone of death"? can an effective remainder arrive at the position to be attacked? Does any one believe it possible that the way for the assaulting columns can be opened by skirmishers, that by sacrificing one or more such lines the main attack can reach an enemy entrenched, who covers with bullets a glacis destitute of cover? Never!

No matter what the quality of the troops, or their morale, or the quality of their leaders; both the company in line of battle and the charging squadron as well will falter, give way, and vanish before the hurricane formed of these thousands of steel darts. No longer by means of more or less ingenious dispositions, masking human breasts with other human shields, can one overcome the brutal force engendered by modern science.

Tactics are powerless when the troops melt under fire, as do leaden bul-

lets in a white-hot crucible. Other means must be chosen. Why, indeed, should these remarks be spoken of as matters of future note, when their application is in the immediate present? The truth is, that the effects of fire to-day are such that the problem of protecting the soldier against it, haunts those who perplex themselves with such grave matters.

Let us examine the situation which has been created by the armament of Europe at the present time; let us look at the results attained by the French Lebel, the German and Austrian Mannlicher, the English Lee-Metford, the Italian Vitali, the Swiss Schmidt, the Danish Krag and the Russian '95 Model.

The results from all these arms are much the same. Let us ascertain these results in the only manner permitted us during this period of prolonged peace. The objection is made that the results obtained on the rifle range differ materially from those of the field of battle. But even if we take account of this evident difference, the corrected results will still be sufficiently convincing.

To one who has as yet taken no part in what is called the infantry, "battle fire," all this is most interesting and suggestive. It is the crown of fire instruction for the "queen of battles," the infantry arm, wherein resides the highest fire power.

The individual has already been instructed in the firing schools. He has appreciated the accuracy of his arm in shooting at a circular target at 200, 300, 400, 500, and 600 metres.

In the schools of application, they have accustomed him to judge with the naked eye, how the enemy would appear lying down, kneeling, standing and in movement, all within the limits of individual fire (0 to 600 metres) with silhouettes as objectives. He has also been familiarized with magazine fire.

Then come the collective fire drills, under the control of the officers. The men are collected in groups of 12, 25, and 50, for volley firing and rapid fire at groups of silhouettes at known distances of 800 and 1000 metres.

As the difficulties of fire increase with uncertain distances, the targets are eventually placed at unknown distances—600 to 1200 metres. The officers estimate the distance, and observe the dust produced by the sheaf of projectiles. The men also fire a certain number of volleys in a given time at similar, but disappearing targets.

Having finished this course of instruction, there remains nothing to do but perfect the instruction of men and officers, to unite in one manœuvre all the separate fire drills, and to apply in a clearly defined manner, the principles of fire control.

On the great plains, of which the camp at Chalons is a type, sufficient ground can be obtained where shells and bullets can be fired without inconvenience to the inhabitants. Here battle-fire is executed by company and battalion.

Let us accompany a party of students from St. Cyr through one of these manœuvres. They have just completed the preliminary series, and the resulting figures are the most recent from which deductions can be drawn. Two or three companies are consolidated to obtain the war effective of the

210 to 220 rifles. The captain commanding this war company, received instructions on leaving camp as follows : "The enemy is marching in such a direction ; to preserve his flank from surprise, he has sent a company to take position in the neighborhood. It is this company (of silhouettes) that you must discover, reconnoitre and capture."

Before departure the students receive 32 cartridges apiece ; in war the soldier has 185, without taking into account the reserve ammunition carried in the "ammunition sections" accompanying the artillery. If, later, you find the results too favorable, remember that in war the combatant, having six times the ammunition, is able to increase his fire correspondingly while advancing.

On the flanks the patrols move out, charged with the task of discovering the enemy. They run, gliding through the little thickets and groves of fir, concealing themselves on the edges, observing and moving forward again with a glance toward those comrades with whom they are to keep in touch.

Several kilometres are passed over in this manner, then a messenger comes running toward the captain—"The enemy is in sight!" "Show me their position on the map." "Here, sir." "Well, and at what distance do you estimate them?" He hesitates, for while it is comparatively easy to estimate distances under 1000 metres, it is easy to make serious errors over that distance. "1800, 2000 metres, perhaps, but I am not quite sure about it."

The captain rides to the point of his advance guard, dismounts and observes for himself. There indeed is the line of black silhouettes installed above him in a magnificent position on a crest, in front of them a gentle slope, open and favorable to ricochets. Happily, silhouettes do not fire back. It is about 1300, not more; explains the captain.

How can the officer rectify, at a glance, this error which would have caused his company to deliver an ineffective fire at the expense of wasted ammunition?

He has estimated the distance by the aid of an instrument just adopted as the range-finder for infantry, and which, after the name of its inventor, one of the most noted captains of the Normal School of Fire, is called the "Field-glass Souchier."

One word about this, for it has become the indispensable complement of the rifle.

What, indeed, would be the use of having a sight graduated to 2000 metres, if one judges the enemy nearer or farther than he actually is, and if the sheaf of bullets that one destines for him falls in front of or behind his position?

The "Field-glass Souchier" is a powerful binocular. When properly focussed there are interposed between the eye and the objective, by the simple pressure of a finger, two prisms of certain refracting properties. Immediately there is no longer one objective, but two images of the original objective appear. One of these is the real object focussed upon, the other is an image virtually created by the prism, but easily recognizable by its shaded appearance, its being behind and relatively higher than the real

image, and by the fact that as the distance increases the false image rises proportionately in rear of the real one. All the value of this new telemetre lies in this last fact. The object which serves as a base of construction in this instrument is a man of average height standing or on horseback.

If the head of the real image is at the height of the shoulders of the false one, the distance from the observer is 300 metres, if at the waist, 600 metres, at the knees, 1000 metres. If the false image is above the real, so that its feet appear to rest on the head of the real one, then the distance from the observer is exactly 1400 metres. If they separate? then the distance is over 1400 metres, and the values are no longer proportional or constant.

Great results already appear from having the power, without measuring a base, without moving forward or backward, as in the "Labbez" and the "Goulier," to correctly estimate a distance within the limit of really effective range.

Passing through a wood, the company rejoins the advance guard and is silently massed a little in rear of the border. A single whistle, followed by a signal from the captain, and "manoeuvring silently" the company deploys under cover, with the sections at ten paces interval. "Fire volley by section from right to left, on the line of the enemy crowning the crest: at 1300 metres!"

These preliminary commands are given in a quiet voice, it is necessary not to make the men nervous, and the calm of the chief contributes more to prevent this than anything else.

The chiefs of sections repeat the commands, there follows a rattle as the loading levers move forward and back,—a silence,—then the command "—aim!" given quietly by the commander of the right section. Again silence, one could hear the humming of an insect.

"Fire!"

This time the command is short, thrown out like the lash of a whip, carrying with it immediate execution. And fifty shots are delivered as one.

The fifty bullets, rotating 2500 times a second, tear the air with their whistling sheaf, and strike the ground covering an ellipse of 300 to 400 metres in depth. "A little short," says the captain, who has not taken down his glass. In fact there was too much dust in front of the mark, and not enough behind, the objective did not lie in the midst of the dense portion of the sheaf.

"Second section," he commands, "at 1350 metres!" This time the result is good, the distance is found, and the fire continues without interruption from right to left.

We perceive that the infantry captain of to-day has become the commander of a battery of four mitrailleuse, his four sections,—and regulates his fire and gives his elevations exactly in the same manner as an artillery captain commanding six pieces,—changing position, masking them,—all with a facility that could never be obtained by the commander of a light battery.

Cease firing! sound the bugles. The first period of combat, that of volley firing at long range, is over.

Now for the results.

The officers gallop to the targets. Their number is equal to that of three sections of 56 men each. The centre section is represented by standing figures, those of each wing by kneeling ones. Behind each section is a figure representing its chief, this silhouette is marked with a white line around the neck. Twenty metres in rear of the centre section, a group of standing figures represent accurately the captain, commanding this immovable company, then, back of him, his adjutant, his quartermaster, and two soldiers to carry orders.

Let us look first at this group. The adjutant, quartermaster and one soldier have received five bullets between them. Two chiefs of section have been touched. On counting the silhouettes struck, we find sixteen men injured,—a total of twenty-one men out of 176 on the ground disabled,—at 1300 metres.

A fatigue party, rapidly paste up the holes, the sound of the "commence firing" resounds, and volley firing is recommenced.

This time it is executed while advancing, the sight being changed at every halt, and does not cease until about 700 to 800 metres has been passed over, when the company finds itself about 600 metres from the enemy.

Once more the results are ascertained after the second phase and they commence to be disquieting. Out of 176 silhouettes; 62 have been struck, many having three shots in the abdomen, the captain this time is, to use an expression current at St. Cyr, "out of luck," having two bullets in his thigh. Of those surrounding him only one is untouched. We must not overlook the fact that the silhouettes on the flanks are intact, the fire has instinctively been concentrated on the centre.

Under 600 metres, it is useless to hope to be able to continue volley firing; the soldier, weakened by the strain would not obey the commands, better to let him fire as he pleases.

"Fire at will! at 600 metres! at the line of the enemy, distribute the fire!" The effect of this last recommendation is visible when the next examination is made, for the flanks and centre have been aimed at equally.

They move forward, halt, fire, the fire creeps along the line, slackens, recommences; the men lose sight of the mark in the smoke, for the repeated discharges have given a dash of blue to the atmosphere; they fire without urging, whenever they can aim.

The result of the fire at will at 600 to 400 metres, each man having fired an average of four shots, is 96 silhouettes struck.

We are now at 400 metres, a typical distance.

From this point the effort must be redoubled; it is necessary to overwhelm the enemy under a hail of bullets and to overawe him by the menace of the coming assault. The line of silhouettes has been reinforced, a fourth section having been promptly put in on the left by the fatigue party.

"Rapid fire!" The bayonets leap from their scabbards, then the fire re-commences. Before the unfortunate silhouettes the dust flies in clouds, mingled with tufts of grass.

With the bayonets elevated, the line advances at the double time, halts, and renewes the rapid fire for half a minute. Ten cartridges have been fired by each man. This time the result is terrible! Out of 234 silhouettes, 174

have been hit. Each one bears the marks of at least three bullets. The captain's group is annihilated; the commander of the company having no less than nine bullet holes in his head, and not a chief of section with less than eight shot marks.

Our attention is attracted to the chief of the third section, who is fairly riddled with holes. They number 27! It is no longer a silhouette but a sieve.

The reason for the bitterness displayed against this unfortunate officer is easily found. He is standing behind his section which is kneeling, and instinctively the majority of the opposing section have taken him as their mark. Let officers, who, in the approaching war seek to give courage to their men and evince their own hardihood, take warning from this, and burrow as their men do. Such exhibitions of personal bravery, mingled with vanity, were well enough at Sebastopol. In the war of the future they have no place, and will be paid for in blood.

Returning to our assaulting party, we find that the original eight cartridges are yet intact in the magazines, for the magazine should never be used except on the order of an officer. The moment has now arrived,—the distance to the enemy is but 150 metres—this is the supreme moment, that of the assault, and it is necessary to prepare for it by an overwhelming fire.

"Magazine fire!" No description can convey an adequate idea of the forty seconds that follow. The men fire with the utmost rapidity, taking care however to bring the rifle to the shoulder and to keep the barrel horizontal. It is a moment that cannot be forgotten. Indeed, no company could have remained in position before this annihilating fire, unless it was entrenched.

Now the charge! Behind the company the assembled bugles are sounding with all their might, the time increases, a command from the captain dominates the tumult! "Charge bayonets!" Then comes a yell, the men are striving to pass each other, the officers are in front of their sections—sabre in hand—calling, "forward! forward!" In the delirium of the next few seconds one obtains a glimpse of the sensation that will come when the moment finally arrives and this prelude will be followed by the final shock of desperate men.

The line has arrived at that of the silhouettes. Laughter and exclamations replace the yells. The students count the holes, and point out where the iron frames of the figures have been cut into jagged saw teeth by the bullets, and where the turf has been seamed by the projectiles as by a harrow with a thousand teeth.

The unhappy chief of section noticed formerly, has received thirteen new bullets: total, 47 received by him during the combat. The captain and staff have been riddled.

Total for the fifth and last stage: 203 silhouettes struck out of 234. Recapitulation; for the entire manœuvre: Fired, 6500 shots. Hits, 1897.

* Admitting that in war but one tenth of this result would have been

*Translator's note: In connection with this it appears as if Captain Danrit balanced the probable loss in war with effect produced by the increased ammunition supply—185 cartridges instead of the 32 used in this manœuvre.

attained ; this modified result would not appear too great, taking account of the low trajectory and the number of shots at the disposal of the combatants.

This is a loss of 189 men out of 250.

Now take the trouble to pass over the crest and 500 metres down the far slope. Before the action, the officers of the Firing School, have placed there in column and in line, several ranks of figures representing reserves under shelter, waiting their turn to take part in the fight.

Yes, they have been sheltered from sight, for the assailants have not suspected their presence ; but not sheltered from shots, for the ricochets from short shots, sparing the line of combat have overleaped it, and followed down the further slope of the crest ; while the high shots grazing the turf have struck the reserves behind their fancied security.

On counting the bullet marks on this second rank of figures we find 300. And many more of the shots fired this day would have found billets ; Shots fired foolishly, and with varying ranges that might on the field of battle find living targets,—massed infantry, artillery in position or cavalry in motion. What we have followed is but a tiny corner in a lurid picture.

When the projectiles of modern artillery threatened warships with destruction, the latter were at once armored.

When melinite appeared, overthrowing battlements, parapets of eight metres in thickness like cardboard, and perforating the magazines buried in the depths of the fortresses, concrete formed a barrier.

When plunging fire threw on cannoneers and their pieces, heaps of débris, the men and guns were sheltered under steel cupolas.

The infantry bullet of to-day will kill four men, one behind the other. What has been done to cover the first and preserve the other three? Nothing ! The man is no more protected to-day than he was at Fontenoy or Leipzig ! Is it an impossibility to protect him ? It would seem not, since Denmark, in the estimates for the budget of 1893, has provided a sum of 100,000 crowns for the manufacture of portable shields intended for infantry troops.

Give a shield to an infantry soldier ? This idea is provocative of laughter, and Caran d'Ache would undoubtedly find therein material of an amusing type for his inexhaustible series of the future legionary, helmeted as in the day of romance, sheltered behind a shield and delivering his fire with his only disengaged hand. But we may come to it.

Military Notes.

CAVALRY MANŒUVRES.

AT the Royal United Service Institution, Lieut.-General J. Keith Fraser, C. M. G., Inspector-General of Cavalry, presiding, Colonel J. D. P. French, late commanding 19th Hussars, read a most instructive paper on "Lessons to be Drawn from Cavalry Manœuvres at Home and Abroad."

Colonel French first briefly considered the characteristics of some of the most important cavalry concentrations which have taken place in Europe during the last seventy years.

In Prussia before any new instructions in handling cavalry are published they are always practically tested at manœuvres—indeed, on some occasions the new ideas are the direct outcome of the manœuvres. Moreover, whenever cavalry manœuvres take place an impetus is given to practical cavalry training, and progress in efficiency for war is made; while on the other hand, during a period of twenty-two years (1821 to 1843), in which no manœuvres were held, the training of cavalry degenerated to ceremonial parades.

Colonel French asked if, after considering the facts he had produced, any one could doubt that the present acknowledged efficiency of the German cavalry in mass tactics, and the large number of capable leaders to be found in every division and brigade, are not in a great measure due to the knowledge and practice gained in frequent manœuvres?

Annual cavalry manœuvres have now become an important feature in the military training of all the great European Powers, but up to a few years ago we seemed almost entirely to have followed in their footsteps, and accepted their views without practically testing them. Some time ago, however, General Lord Roberts, when commander-in-chief in India, took the lead in giving practical effect to the long-recognized and oft-expressed need for annual independent cavalry manœuvres. A cavalry camp was formed in the Punjab in the winter of 1887, under the command of Major-General Luck, C. B., Inspector-General of Cavalry in India, since which date cavalry manœuvres have become an annual institution in that country. Lieut.-General Sir Evelyn Wood, when in command of the Aldershot Division, initiated cavalry manœuvres in this country.

In all the cavalry camps, both here and in India, the programme has generally consisted in a certain number of independent brigade drills under brigadiers, followed by similar exercises of the combined division; and, finally, the force is divided into two opposing brigades or divisions, accord-

ing to its strength (brigades in this country, divisions in India), which manœuvre against one another, starting a considerable distance apart, under general and special ideas set by the director of manœuvres. During manœuvres opportunity is taken to test new equipment and proposed methods of carrying kits, while experiments in forage and management of horses in the field are tried.

The manœuvre reports of the inspectors-general at home and in India are full of valuable comments, bringing to light errors and shortcomings the existence of which were more or less unknown, or quite ignored, in former years. The valuable report recently issued by the inspector-general on the Berkshire manœuvres deserves particular attention, as never in our generation has so large a cavalry body been exercised in reconnaissance in England on such an extensive scale, while the practice in the occupation of cantonments under service conditions, together with the use of field telegraphs, seem new features at such manœuvres. Looking at the results of our cavalry manœuvres as compared with those of Prussia, it cannot be said that ours have borne fruit in the direction of new regulations and instructions for employment of cavalry. No doubt after cavalry manœuvres have become an annual occurrence in this country, we shall find that British methods of handling cavalry will be second to none, either in originality or in practical execution. Yet, notwithstanding the absence of new ideas, our cavalry manœuvres have not been unfruitful. Foremost amongst the advantages which have accrued is, I think, the estimate which they have enabled us to form as to the efficiency and readiness of our cavalry to carry out its rôle in war. All leaders, too, get an insight into what is likely to be required of them and of their command in war, and can form an idea of the standard of efficiency in manœuvres which squadrons should attain in order to be fit to act in a cavalry mass.

The real object of manœuvres is to accustom the cavalry to act together in masses, in strict accordance with certain ascertained rules and methods; to train it as the great pioneer force of the army in the field—the eyes and ears of the commander-in-chief. The work to be carried out is, therefore, designed with a view to practising in large masses. (1) That training in reconnaissance, a complete knowledge of which should have been previously acquired in the smaller units of regiments and squadrons. (2) Drill, manœuvre, and attack. (3) Rapid concentration of the division in any given point; fight of the division against a skeleton enemy; exercises of opposing bodies. Only when complete efficiency in these points is attained, and the hostile cavalry is defeated and driven from the field, will the road lie open to the carrying out of that great strategic task of cavalry in modern war—the lifting of the veil which shrouds the enemy's movement.

Regarding reconnaissance, the experiences of recent manœuvres open up many points for thought and attention. Military history teems with examples of how success and failure, in many of the most notable campaigns of modern times, can be traced directly to the activity or inertness of the cavalry reconnaissance. Calling to mind our most recent experiences of reconnaissance in peace manœuvres, viz., the work carried out in Berkshire on September 2 and 14 of last year, the question arises, Do the

results justify us in a belief that we give sufficient time and attention to this most important subject? The official report of the Inspector-General comments at some length on our deficiencies in this respect. What requires closer attention is the instruction of patrol leaders.

As regards the movement of reconnoitring bodies, the methods of advancing by *bonds successifs* (or *sprungweise*, as the Germans term it) deserves careful consideration and practice. Moreover, it appears to be an error, and one which may lead to great mistakes, if those responsible for the instruction of our cavalry officers remain satisfied with practising our officers in simple *tactical* reconnaissance exercises. Training in *strategical* reconnaissance requires different measures to insure success. Officers must first of all be thoroughly instructed in their duties theoretically. Afterwards, special exercises on an extended scale in the field should be carried out.

During the past drill season similar manœuvres, but from force of circumstances, on a smaller scale, were carried out by General Keith Fraser at his inspection of regiments in reconnaissance. At the end of October the cavalry regiment at Windsor moved with the Hounslow regiment from the line of the Thames against the two London regiments, which were located in outposts near Harrow. Special missions for destruction of railway and reconnaissance of ground and troops were also directed to be carried out. The cavalry regiments at the Curragh were similarly exercised, while at stations where single regiments were quartered wings of regiments were exercised as opposing forces. It thus seems that during the last season a great advance in reconnaissance *inspection* has been achieved.

Divisional drill and manœuvre are designed to train the division for the fight, more especially in qualifying subordinate leaders of lines, regiments, and squadrons for successful leading of their commands in line tactics, by stimulating rapid, mutual understanding between leaders, quickness of eye, in rapidly grasping the situation, and arriving at immediate decisions. A clear distinction must always be drawn between "drill" and "manœuvre," and it is a question worthy of serious consideration whether the greater portion of the time at disposal should not be devoted to "drill."

Advantages can be gained in instruction from the use of single-rank formations. When drill ground and strength of establishment admit, a regiment can be formed as a brigade. Leaders thus get practice in leading higher units than they would in regimental parades. In the drill of the division it is perhaps needless to point out the vital necessity for constant attention to "pace" and "direction." Those who have had experience in divisional exercises know well how difficult of attainment is proficiency in these respects, and how all-important is their correct performance in the cavalry fight.

A most important question is the choice of the moment for full deployment into a fighting formation. A too early deployment sacrifices the full power of manœuvre, discloses one's intentions, and abandons advantages of ground for cover. A late deployment means risk of surprise. Correct estimation of space and time is most necessary for every cavalry leader, but more than any for the divisional commander. The disposition of the lines of a division deployed for manœuvre previous to the attack, the rôle each

has to play under constantly varying circumstances of ground and hostile dispositions, are matters of the greatest moment to secure success in the fight, and imperatively demand constant attention and recurring practice. The number of squadrons to be placed in first line must depend on the ground, and on the known or estimated strength of the enemy.

All who have experience of divisional manœuvres must allow that what, more than all, requires constantly recurring practice, is the conforming of the second and third lines to the movements of the first, and the intervention of the former, sometimes by flank attack, sometimes by flank defense in support of its attack. Nothing is more urgent to insure success than the skillful and intelligent handling of the second and third lines, and of all the operations of a cavalry division none present greater difficulties, or demand such constant practice.

Following out the same plan of instruction, cavalry should be trained to form rapidly for attack on infantry and on guns. The form of attack by a cavalry division or infantry which seems now to find most favor is, briefly, as follows:—The division (three brigades) moves in a triple column of troops opposite the point from which the attack is to be delivered. On reaching this point each brigade wheels into line, and four successive lines are formed, 200 yards distance between each. The two outer regimental wings of the leading brigade in extended files form the leading line; the two inner wings moving with closed files and ordinary squadron intervals, each wing covering one flank of the leading line, forms the second line. The other two brigades, moving with closed files and ordinary intervals, form respectively the third and fourth lines.

In the practice of concentration for the fight in a given point where the enemy's main force is found to be, the use and value of manœuvres of large bodies of cavalry is exemplified in a striking degree. Following the practice of concentration comes that of the manœuvre and attack of the division against a skeleton enemy. This is most useful and instructive, as illustrating in a practical manner the object sought to be attained by the drill and manœuvre exercises of previous days. To complete these valuable exercises, it would be of great advantage to carry out pursuits of various kinds, and under every variety of circumstances and ground. The exercises of opposing bodies, with which it is customary to culminate the annual manœuvres, are, undoubtedly, of great importance.

The system of annual manœuvres has given us most valuable experiences in the important subject of the combined action of cavalry with horse artillery and machine-guns. There is necessity for more constant practice in the combined manœuvre of the two arms to bring about harmonious action and mutual support. The most valuable acquisition which modern inventions have conferred on cavalry is machine-guns. We have hardly yet realized what invaluable assistance and support their great mobility and rapidity of fire will render a cavalry force in the field. In the fight of the brigade or division they ought not to be given a sort of independent "roving commission." They must be united under one command and form in themselves a distinct unit, destined to take its proper place in harmonious action with the cavalry and artillery.

Amongst the many advantageous results which have accrued from the annual cavalry manœuvres, discussion has been aroused and consideration directed to our existing cavalry organization and system. These manœuvres have, moreover, undoubtedly brought certain failings to light. Both here and in India manœuvres often show that there is a want of a sufficiently uniform system of training and instruction, which can only be attained by a more extended brigade organization and the maintenance of units more nearly approaching a war strength. It is an important question whether a great deal more could not be done and greater efficiency attained under a different system of organizing and distributing the cavalry in the United Kingdom and in India.

In conclusion, Colonel French urged the absolute necessity for annual cavalry manœuvres more especially having regard to the comparatively trivial cost they entail upon the country.—*United Service Gazette.*

FIELD-FIRING AT POONAH.

Some important experiments in field-firing with ball cartridge took place during the last days of the camp of exercise recently held at Poonah. Each force did its firing separately—the Northern Army, under Colonel Ryley, on February 1; and the Southern Force, under Colonel Broadfoot, on February 2. In both cases the results attained were pronounced to be satisfactory. First aid to the wounded was practised on each occasion under the orders of the principal medical officers of the forces.

The Northern Army when exercised was distributed as follows:—The 1st battalion Loyal North Lancashire Regiment as vanguard; the 2d (P. W. O.) Bombay Grenadiers in the second line; the entire 2d Infantry Brigade being in the firing line—disposed in the usual formation of firing line, supports and reserves. The position of the enemy was a battery of artillery on a ridge well in advance of the entrenched position held by their infantry. The second position of this battery, after its withdrawal from the ridge, was some considerable distance to the right of and behind the entrenchments to cover its supposed eventual retreat. Operations commenced by the firing of a signal gun from One Tree Hill, whereupon a supposed artillery duel took place, the artillery of the Northern Force (two field batteries) firing blank, successive explosions of powder puffs by safety fuses representing the firing of the enemy's battery. The artillery positions as well as the entrenched ones were represented by dummies and screens and shelter trenches, prepared by the Sappers and Miners, who carried out the work in their usual thorough manner. The vanguard, concurrently with the artillery duel, opened fire on screens representing a horse battery coming into action, and later on, on other targets and dummies, representing a battery in action. The enemy's battery having been supposed to have been silenced by the fire of the Northern guns and of the vanguard, the battalion composing the latter advanced beyond the ridge, and having thus done its work, the troops disposed for the attack, *i. e.*, the 2d Infantry Brigade, supported by the remainder of the 1st Brigade as second line, advanced to the attack, while the original vanguard, now disposed in the third line, held the ridge, and the guns again came into action against the enemy's second-

artillery position. The attack closed the day's proceedings. The practice of the vanguard on the artillery was decidedly good, every object being hit, many of the figures in several places. The explosion of the powder puffs in the entrenched position had a very realistic effect, which was greatly enhanced by the fact of the puffs setting fire to the grass on the hill-sides, the final advance being over a blackened plain with the flames leaping up in the distance.

The results of the field firing operations of this force are detailed below :

Record of hits by infantry fire (Loyal North Lancashire Regiment) on R. H. A. battery in advanced position—one horseman's screen, 6 feet by 12, fired at for one minute at a range of 1200 yards, no hits; four guns unlimbering, each 6 feet by 12, fired at for 1½ minutes at 1100 yards, two hits; four guns in action, forty-three hits; twenty-five dummy men, eighty-one hits; four limbers concealed in hollow, each 8 feet by 12, eight hits. The four guns in action and the twenty-five dummy men were under fire for 14 minutes, and the four limbers concealed for 20 minutes, the distance varying between 900 and 400 yards. The total number of hits, therefore, was 134; total rounds fired, 2091; hits per 100 shots, 6.40.

Record of hits on infantry of defense in main position :

4th Bombay Rifles—Column deploying, seven objectives, each 4 feet by 11, fired at for 4 minutes, thirty-three hits; left or Northern two companies, eight objectives, each 2 feet by 20, 523 hits, and the eight screens of same size representing supports reinforcing had fifty-two hits. These objectives were under fire for twenty-three minutes, at distances from 1000 to 300 yards. The total number of hits made by this regiment, therefore, was 608, for 6889 rounds fired, giving 8.80 hits per 100 shots.

28th Bombay Pioneers.—On eight screens, 2 feet by 20, representing centre two companies, there were 248 hits, and on four screens representing supports reinforcing (each 2 feet by 10), 58 hits; making a total of 306 hits on these objectives, which were fired at from different distances from 1000 to 200 yards, for twenty-three minutes, which gives 8.20 hits per 100 shots.

The 25th Bombay Rifles fired at eleven screens, eight (each 2 feet by 20) representing right or Southern two companies, and three (each 3½ by 20) representing support concealed, for a period of twenty-three minutes, from 1000 to 200 yards. There were 297 hits on the former and 15 on the latter—total, 312; number of rounds fired, 2030; hits per 100 shots, 15.30.

On two other screens (4 by 11) representing reinforcements, which were fired at by the brigade for about half a minute at intervals, there were 4 hits. The total number of hits on all these dummies, therefore, was 1230; the total number of rounds fired by the three regiments being 12,649, giving 9.70 hits per 100 shots fired.

On Infantry Retreating.—2d Bombay Grenadiers, on forty heads and shoulders (each 2 square feet) at 300 yards, 23 hits; on the first group of four screens (each 3½ feet by 20) at 450 yards, 89 hits; on the second group of four screens at 550 yards, 2 hits; on one horseman screen (6 feet by 12) at 600 yards, 2 hits. These objectives were only one and a half minutes

under fire. The Grenadiers thus scored 14 hits per 100 shots, for in 823 rounds fired they made 116 hits.

In the Southern Army, which carried out its firing on the following day, the 2d Battalion Yorkshire Light Infantry composed the vanguard, the 8th and 10th Bombay Infantry being first line, and the Marine battalion second line. The force formed up west of Hinjouri village, and at nine o'clock, when the ground was reported clear and all in readiness, a signal gun was fired from One Tree Hill, and the vanguard proceeded to attack the first artillery position of the enemy. During their attack the first line gradually drew closer to them, followed at a longer interval by the second line. The first position was now supposed to have been carried and the men of the vanguard remained where they were in position, while the first line, who represented the real main attack, passed through their ranks and took up a position ready for an attack on the second line of dummies. The two field batteries of the Southern Force opened fire (blank) from the west of One Tree Hill upon the right of the enemy's position, the fire returned by the enemy being represented as before, by powder puffs. The supposed artillery duel having ceased, the 8th and 10th Bombay Infantry proceeded to attack the main position, the second line slowly drawing up to them, ready to assault the position when it was deemed to have been sufficiently shaken by the fire of the attackers. At about 250 yards from the dummies the whistle sounded; the men ceased firing. The Marine battalion then passed through and opened fire on the third line of targets, which represented a retreating enemy. The day's proceedings terminated with the pursuit of the enemy in the direction of the village of Bhor, carried out by the 2d Bombay Lancers.

The field-firing results of this force are given below:

2d Yorkshire Light Infantry.—One horseman screen, 6 feet by 12, fired at for 1 minute at 1250 yards, no hits; four guns unlimbering (each screen 6 feet by 12), fired at for 1½ minute at 1250 yards, 13 hits; four guns in action, twenty-five dummy men, and four limbers concealed in hollow (8 feet by 12), fired at for 16 minutes altogether, at distances varying from 1200 to 875 yards, had 55, 102, and 4 hits respectively; total hits, 174; rounds fired, 3737; hits per 100 shots, 4.60.

Hits on infantry of main position:

The 8th Bombay Infantry fired at one target, 4 feet by 11, representing company deploying, for 3 minutes, and made 25 hits; and at eight screens (each 2 by 20), representing left or Northern two companies, for 30 minutes, and made 549 hits. The distances fired from were from 1000 to 300 yards. Firing 5267 rounds and securing 574 hits gives a result of 10.87 hits per 100 shots.

The 10th Bombay Light Infantry fired at eleven screens altogether, three of which were 2 feet by 10, and eight were 2 feet by 20, for thirty one minutes altogether, the former representing supports reinforcing, and the latter right two companies, at distances varying from 1050 to 200 yards. On the former there were 157 hits and on the latter 590, making a total of 767 hits in 4956 rounds fired, giving a result of 15.47 hits per 100 shots.

The brigade also fired at six other screens, four of which, representing

supports reinforcing, were 2 feet by 10 each, and two representing reinforcements 4 feet by 11 each, at the latter for half a minute at intervals. On the former 29 hits were recorded, and on the latter 52 hits. The total number of hits on all the targets at which these two regiments fired was 1402; the total number of rounds fired being 10,223. Results—13.71 hits per 100 shots.

On infantry retreating, at which the Marine battalion fired for four minutes and forty-five seconds in all—forty heads and shoulders (2 square feet) at 300 yards, 19 hits; four screens in the first group ($3\frac{1}{2}$ by 20) at 450 yards, 135 hits; four screens ($3\frac{1}{2}$ by 20) in the second group, at 550 yards, 84 hits; and on one horseman screen (6 by 12) at 600 yards, 5 hits; total number of hits, 243; total number of rounds fired, 1827; hits per 100 shots, 13.30.—*United Service Gazette.*

THE FUTURE OF FIELD ARTILLERY.

One of the most interesting questions suggested by the paper on "Field Artillery Fire," read by Major A. J. Hughes, R.A., at the Royal United Service Institution last Wednesday and reported in another column, is, to our mind, What is to be the future of Field Artillery? Abroad, as Major Hughes reminded his hearers signs are not wanting to show that before long a field quick-firer, or, as the Major would rightly prefer to designate it, a rapid loader, will be introduced. The power of a very rapid fire, if suddenly attacked at short ranges, and the saving of labor of running up, are clearly the main advantages to be gained; the latter is a constant advantage, but the former would, as Major Hughes truly observed, only be of use in exceptional cases. For the main fighting, moreover, the ordinary breech-loader can fire quite as rapidly as can be observed and regulated. In these circumstances there is little difficulty in agreeing that it does not appear desirable to adopt a quick-firing equipment, unless the gun is as powerful as the ordinary field-gun and the equipment carries an equal amount of ammunition for the same weight behind the team.

Undoubtedly, of late years great strides have been made in the manufacture of quick-firing field-guns, as we suppose we must still term them, and many of the difficulties have been successfully overcome. Whether the French are wise in believing them to be so much so as to justify their giving orders for a large number may possibly be a question.

The Maxim-Nordenfeldt field quick-firer has some excellent points. The gun is held in a cradle, and there are two hydraulic buffers, one on each side; on firing, the gun first recoils on the top carriage in a manner somewhat similar to the 12-pounder on the Mark II. carriage. The breech action as Major Hughes remarked, is very neat: one single motion of the handle unscrews the block, opens the gun, and extracts the empty case; a reverse motion closing and locking it. The breech mechanism is also such that in case of a misfire the firing-pin can be re-cocked without opening the breech. The carriage is fitted with a slow-motion traversing gear. It is fitted with the Buffington brake, and has a broad trail with a plough at the end. There is a seat on the trail, and after a few rounds the carriage does not recoil more than a few inches, and it is possible for the layer to remain seated. It is fitted with removable shields, but these are not carried on the carriage.

The Schneider equipment is remarkable for the position of the gun, which is set low, on a line with the centre of the axle, thus reducing the jump and consequent disarrangement of the laying to a minimum ; at the same time it has the disadvantage, pointed out by Major Hughes, of the loss of command.

The long contest between "pole" and "shaft" draft seems now to have been fought to a conclusion in favor of the former, our Horse Artillery being already fitted with it, and the probability being that its introduction into the Field Artillery will not be much further delayed. It has not been without a struggle that we have parted with shaft draft, though other nations refused to believe in it, and we might still be persisting in its use had not the drill of wagon supply and the consequent necessity of rapidly unhooking the teams brought the question to the front. The facility of unhooking, however, cannot be of less importance in the case of casualties among the horses. That in the new system all horses carry breeching and have exactly similar harness we regard as a great advantage. Certainly the authorities cannot be charged with coming to a precipitate determination, having spent three years in carrying on extensive trials with the various systems ; but we think we may fairly hope they have at last settled upon an equipment—a modification of the Swiss—which leaves little to be desired. As fitted to the new Horse Artillery limbers, nothing, it seems to us, could well be simpler or more effective. It consists, as explained by Major Hughes, of a pole of medium length, supported by a wooden cross-bar buckled to the bottom of the wheelers' collars. The pole chains are not attached to the collar, but connected by a strap directly with the breechings. The strain of stopping the carriages is thus taken entirely by the breechings. The trace draft is similar to that with shafts, except that those of the wheelers are hooked to swingle-trees. To unhook, the pole chains have to be cast loose and the wheelers' swingle-trees unhooked ; the horses can then move straight to the front.

There has, we venture to think, been very possibly of late years too great an inclination to subordinate every other consideration to that of obtaining a high muzzle velocity. The carriage and gun will stand a certain strain, which increases directly with the velocity and weight of shell. If, as Major Hughes very truly observed, you increase the one you must decrease the other, and it has been found that with the present equipment one can have the choice of a 12-lb. shell and a muzzle velocity of 1710 foot seconds or a 15-lb. shell and a muzzle velocity of 1550 foot-seconds ; and there is, as the gallant major contends, no doubt that the latter is the more powerful combination, because, first, each shell is 3 lbs. heavier, and, secondly, the heavier shell having a greater transverse density preserves its velocity better, and at 2000 yards has the higher remaining velocity ; and, after all, it is high remaining velocity, and not muzzle velocity, that is the greater desideratum. The results of experimental practice also show that the 15-lb. is the more powerful, for the proportion of throughs to lodges and strikes is greater with it than the 12-lb. Part of this, again, is probably due to the position of the burster ; the extra weight having enabled the burster to be shifted from the head to the base, and yet preserve a large number of bullets.

General Brackenbury has well said that experimental firing always tells against artillery in cases of comparison; because fatigue, rapid movement, and the excitement of combat have a more detrimental effect on infantry than artillery fire. At short artillery ranges, with care, there is no necessity for very accurate laying, and at long ones the distance of the enemy has a tendency to prevent anything like agitation. The gunner is not always marching and running about like the infantry soldier, and, if he were, his beating heart and panting breath would have no effect on the steadiness of his weapon.

On the other hand, every quickened breath or anxious heart-beat affects prodigiously the aim of the infantry rifle. General Brackenbury relates that he himself has seen troops, when within 100 yards of each other, missing almost every shot, simply because, being always on the look-out for a rush, they did not raise their rifles properly to their shoulders, or take aim at all. If two bodies of infantry, in almost any formation, were to shoot at each other at ranges from 600 yards downwards with anything approaching the accuracy of the practice ground, mutual annihilation would result; but we know very well that nothing of that sort ever has occurred in war, and we can guess pretty well that it never will.

Field artillery, it is evident, must with improved weapons have a most important rôle to play in future wars, and the recent decision by our authorities to increase the proportion of guns in the strength of our Army Corps is a most wise one. What effect artillery is likely to have, even at extreme ranges, may be judged by an incident during the Franco-Prussian War, thus described by Prince Kraft: "At one moment something was seen moving to the right in the forest of the Ardennes. By the help of field glasses this was made out to be some cavalry marching in two ranks towards the north, and passing through a clearing in the forest on the hill. The batteries endeavored to find the range. With elevation for a little more than 4000 paces we appeared to hit. I considered that the range was too great for the fire to have any effect, and I was about to order it to cease, when an evident disturbance in the ranks of the enemy proved that our projectiles had reached him. We continued then to fire slowly at this moving target so long as it remained visible. * * * On the following day, Lieut. von Kass, while doing duty as aide-de-camp, passed by this point, and found on a narrow crest, which ran between very steep ravines, an entire French battery, which had been abandoned there. The team of the leading gun had been blown to pieces by our shells, and the other guns could not pass it; thus the whole battery fell into our hands, a trophy of the accuracy of our fire."

The coöperation between field artillery and cavalry is also likely in the future to be more intimate, for, as Colonel French aptly observed at the Royal United Service Institution yesterday, when lecturing upon cavalry manœuvres, the increase in the range and accuracy of artillery cannot but make its aid more effective in this direction.—*United Service Gazette.*

WAR KITES.

At the Royal United Service Institution Lieut. B. F. S. Baden-Powell,

Scots Guards, read a paper giving much novel and instructive information regarding kites and their uses in war.

The gallant officer remarked that, after having tried all sorts of forms and shapes and sizes of kites, he was able to put down the following undoubted facts as the results of his preliminary labors: (*a*) That a properly constructed kite can be made to fly in the very lightest breezes, and that, as a rule, the higher it goes the better it flies, since the wind at a height becomes steadier and more powerful as we ascend. The days on which a kite cannot be flown through lack of wind are very few. (*b*) That by fitting "side lines" to the kite it can be steered out of the wind course—that is to say, made to fly on either side of the direction of the wind, and this to an extent of at least 45 deg. (under favorable circumstances 125 deg., or 62½ deg. on each side). A kite can thus always be made to fly over any spot within a quarter of a circle away from the wind, and as far as its string will reach. (*c*) That in an average wind, say, 12 miles an hour, a kite can lift off the ground a weight equal to about 3 lb. per square foot of area, so that a kite of 500 square feet could lift a man. (*d*) That if the string of a kite carrying a weight breaks, the kite forms a good parachute and descends gently. (*e*) The length of the string is practically unlimited, since when a kite has taken out all the string it is able to lift (which may amount to nearly a mile), the end of the string may be affixed to a second kite, and so on. (*f*) That by suitable arrangements of cords, etc., a kite may be made to fly very steadily without any possibility of its "capsizing." (*g*) That on a perfectly calm day a kite can be made to float in the air, so long as it is towed along at a rate of at least 4 miles an hour.

It may often be desirable in military operations to communicate between bodies of troops when the usual methods cannot conveniently be carried out. A post high in the air would often then be of value. It would be specially useful to columns on the march in a broken or thickly wooded country, and under such circumstances that it would be dangerous to detach signallers to outlying posts of vantage. A kite could generally be towed along with a moving column, or could be kept floating above a camp. Even at night it might be found practicable to signal with some form of lamp. With this object small kites have been flown, carrying on their strings an ordinary signalling flag, so arranged that a man holding a pole on the ground, and moving it in the same manner as a flag, causes the flag to "wag" as desired.

A kite lifting a camera high in the air can be made to hover over any given spot, more or less to leeward, and the photographs thus taken might be of the greatest value. There is practically no limit to distance to which it could be sent, and thus plans of fortifications, camps, and positions might be obtained, as well as accurate surveys of the country, showing roads, rivers, railways, and houses. A camera could easily be devised to take a number of different places automatically, and by drawing in the string, or steering to one side or other, a complete survey of a large district might be effected. Its position as regards the ground would easily be found by cross bearings or otherwise.

In the same way an explosive bomb or shell could be carried up and caused to float over the enemy's head, and be discharged by time or fuse.

electric wire, or otherwise. The most powerful explosive could be gently lifted up, and thus a terrible engine of war contrived, so simple that it could be carried by one man, yet more destructive than the most powerful artillery. So long as a point more or less to windward of the enemy could be gained, and a sufficiency of wind existed, this terrible bird of prey might hover over the heads of an enemy; and even if in practice the destructive results were not so great as we might expect, undoubtedly those below would feel somewhat anxious, perhaps experiencing feelings somewhat akin to those of partridges under similar circumstances. Lieut. Baden-Powell stated he had tested the principle on a small scale, using a bunch of grass (weighing 1 lb.) as a dummy torpedo, to be released by a time fuse, hung from a kite with 500 yards of string. It worked very well, and he could even answer for the moral effect produced, as an innocent stranger happened to be passing just underneath the kite when the fatal fuse did its (would-be) deadly work.

Last year, having come to the conclusion that a kite of 500 square feet ought to be sufficient to raise a man in a fresh breeze, Lieut. Baden-Powell had a kite of that size constructed, and found his calculations accurate and expectations satisfied by seeing the junior subaltern lifted off the ground. The object of raising a man would usually be for purposes of observation, working the kite apparatus in the same way as a captive balloon. A kite apparatus which could take up a man would possess many advantages over a captive balloon.

Since an unlimited length of line can be carried by a series of kites, this principle at once suggests itself as a means of communicating with a besieged place. There seems no reason why ten or more miles of telegraph wire should not be thus supported at 1000 feet or so in the air. All that would be necessary would be to start the kites from some point well to windward, the first kite carrying a weighted line which could be released by a time fuse, and the desired length of kite supported wire payed out. When the first kite was over the besieged place you would wait till the time fuse had burned out, and then "drop them a line."

A kite might be the means of raising an electric search-light, which could be directed by several cords. It might also be used for holding up an illumination apparatus for working parties at night. Another simple contrivance which might prove of great value in savage warfare would be the hanging of a torch on the end of a wire from the kite, by means of which native houses or patches of scrub, etc., occupied by the enemy could be set on fire.

A kite, especially one fitted with guiding lines, might prove a useful means of conveying letters, etc., from one place to another, especially across rivers or other obstacles; such a kite might even be the means of supplying ammunition to the troops in the firing line, or in any detached post. There are also many other minor uses to which kites might be put—getting ropes across rivers for bridging purposes, raising flags to show the position of camps, hospitals, etc., or even drawing transport wagons when other means had failed.

At sea kites should prove even of more use than on land. The wind there is usually more steady, and during calm weather a steamer could tow

a kite beautifully. As an elevated post for looking out for enemy's ships they should prove most valuable, and for piloting the vessel in unknown waters another peculiar advantage comes in, for an observer, say, 1000 feet up in the air can distinguish objects at a considerable distance beneath the surface of the sea. Count Orloff found that from a captive balloon 1300 feet high over the Baltic Sea, rocks and sand were clearly defined to a depth of 20 to 23 feet.

For signalling, for aerial torpedoes, for carrying messages between ships, they ought to be useful, while for boat sailing dirigible kites should prove most efficient; there would be no limit to the amount of canvas carried, the boat need not heel over at all, and the wind above is always stronger than below.—*United Service Gazette.*

RECONNAISSANCE DUTIES OF CAVALRY.

Regulations for regimental and squadron instruction in reconnaissance duties of cavalry, drawn up by Lieut.-General J. Keith Fraser, C. M. G., the late Inspector-General of Cavalry, have just been issued as an Army Order, and dated April 1, 1895.

The following will be inserted in Part IX. of "Cavalry Drill," vol. iii., after Section 22:—

Section 22 a—Instruction in Reconnaissance.—The following directions are issued with the object of indicating the progression which should regulate the instruction of squadrons and regiments in reconnaissance and sketching, and the main considerations to be borne in mind so that all ranks may be trained in accordance with sound principles.

1. *Officers.*—The cavalry officer should be familiar with every kind of reconnaissance, and cannot be too highly instructed in this branch of his duty. He must be trained to observe ground always from a clear military point of view, to realize its capabilities in relation to the working of troops, and to judge it accordingly.

Particular attention is to be paid to the instruction of officers in this important subject, so as to insure their being able, whenever necessary, to compile, without loss of time, a clear, short, practical report to the point, and to execute in the saddle a sketch to accompany the report. The object of the sketch is to make the report clearer and shorter, consequently it need only claim to be correct and clear.

Young officers will be taught regimentally how to make practical reconnaissance sketches such as:—1. Of roads; 2. Of a general line across country; 3. Of rivers, railways, etc.

It is recommended that a rough plane table be first used, then the cavalry sketching board on foot, and subsequently on horseback.

Rough sketching by observing the general direction of a line of advance with a magnetic compass, and noting the same in a pocket-book, affords excellent practice for making rough sketches of country passed through. The methods of "Field Book Traverse," and "Prismatic Compass Sketching," are not recommended for cavalry uses. Once a cavalry officer has learned the details of sketching on foot, he must always be required to sketch on horseback, while his sketching apparatus must be limited to what

he could and would carry on service, and should be of the simplest description.

Those officers who have acquired proficiency in the elementary details of the subject will be frequently practiced in the reconnaissance of important sections of country near to the station where the regiment is quartered, the ground selected being thoroughly worked out in relation to its adaptation to some specially indicated military purpose or operation, such as, for an advance guard, the defence or attack of a passage, the tactical conditions of ground for a cavalry engagement, etc. Reconnaissance of ground with mere general objects and no definite military operation in view is of little use.

The intelligence and aptness of officers will be developed by making them reconnoitre ground in which are posted bodies of troops whose strength and position are unknown, and guarded from approach by military dispositions.

It must be recognized as a fact, that the most important training for officers is *practical exercise* in these operations to develop in them sound judgment and quickness; mere paper work is of much less value.

Commanding officers will frequently supervise in person the practice of their officers in exercises of the above description, for they are not only of great use in furthering their education in this important branch of their duty, but they show where practical ability and talent for this kind of work are to be found.

A confidential table will be kept by officers commanding regiments showing the following:—(a) Date on which the exercise took place; (b) Names of officers present; (c) Details of scheme set; (d) Remarks by commanding officer on the value of each officer's work.

This table will be shown to the Inspector-General of Cavalry at his inspection, together with any papers which the commanding officer may consider worthy of his perusal.

2. *Non-Commissioned Officers and Men.*—The object to be kept in view in the instruction of non-commissioned officers is to train every one who may command a group to be a capable patrol leader and able to instruct the men of his group in all that is required of them on detached duty. If we are to have good reports when in the field, non-commissioned officers must be trained with the greatest care and intelligence in barracks. There must also be a certain number of non-commissioned officers in every squadron, so highly trained that they can be relied upon to discharge, satisfactorily, the duties of leader of an officer's patrol.

The men will be trained what, and how, to observe, and to be able to state concisely what they see; they must also be taught how to find their way about the country (*i. e.*, to be messengers), and to repeat verbal messages.

The instruction of non-commissioned officers and men rests entirely with officers commanding squadrons and troops. The main considerations which should be borne in mind and the progression which should regulate their instruction are set forth below:

(1.) *Theoretical Instruction.*—The object of this should be to develop the thinking power of non-commissioned officers and men. As it is quite im-

possible to prescribe exactly what they should do in the thousand and one conditions in which they may find themselves when reconnoitring, it is necessary to give them certain guiding principles, with the spirit of which they should conform.

Briefly this part of the instruction will consist in explaining (*a*) general principles for the movement of patrols; reconnoitring patrols, protecting ditto, etc.; (*b*) nature of cossack, detached, communicating and connecting posts, vedettes, etc.; (*c*) general principles for movement of an advanced and rear guard, and of each fraction of it; (*d*) how to word a report and how to act to insure it being delivered.

(2.) *Map Reading.*—This is one of the most necessary means for the preparatory training of non-commissioned officers in field service, and for men who aspire to that rank. It is absolutely necessary that they should learn to find their way on the map, and also on the ground with the help of a map. In order to make the lessons more instructive, squadron and troop commanders should make their non-commissioned officers work out on the sketch verbally and in their presence small schemes and problems such as daily occur on field service, and should give such instructions as the case may call for. Previous to this, of course, they must have been made familiar with the conventional signs, etc., so as to be able to recognize hills, valleys, woods, villages, marshy grounds, etc.

(3.) The following exercise is intimately connected with the preceding one, and cannot be too highly recommended.

The squadron commander should frequently ride out with his officers, non-commissioned officers, and intelligent men in small parties, proposing problems and schemes for advanced guard, outpost, and patrolling service in relation to the varied circumstances of the actual ground, and making each of them solve them practically. Such exercises will tend to give subordinate leaders a thorough knowledge of the ground and enable them to judge of its influence on the movements of troops and the proper mode of leading them. Moreover, uniformity of ideas and action in the details of field service will be insured in each squadron.

(4.) The practice of patrolling-duty and of patrol-leading in the field should next follow. For this purpose subaltern officers should ride out with small parties of non-commissioned officers and men in order to instruct them in their duties, and small patrols of four to six men under a non-commissioned officer should be sent out on missions which should be clearly defined and in writing. The programme should sufficiently indicate the route to be taken and the nature of the reconnaissance required. The latter should include the most varied objects, such as finding a position for a picket in a particular neighborhood, with a view to covering a certain section of ground; reconnaissance of localities with respect to capabilities of defence or for quartering of troops; whether defiles, bridges, and passages of rivers are passable on certain routes, etc. The essential condition is that the ground must be looked at with a certain point of military importance in view; to be of any use, the mission must never be of a merely general character. Reports from patrol commanders should be accompanied with small pencil sketches executed in the saddle.

As to the question of sketching by non-commissioned officers, in almost every country troops will always be provided with a map of some sort. Moreover, as rapidity in sketching is of vital importance in cavalry work, it seems quite practical that instruction should chiefly take the form of enlarging an existing map before setting out, and then filling in details as the country is passed through.

Too much attention can be paid to neat draughtsmanship indoors at the expense of rapidity and accuracy in the field. Map-making ought certainly not to be the aim and object of the course of instruction for non-commissioned officers in reconnaissance.

(5) The practice of "Field Service" should next follow. For this practice two squadrons might be sent to camps or villages, say ten miles apart, and each one close enough to barracks to admit of its being reinforced without the reinforcement being known to the other. The commanding officer of the regiment should test and practice, by means of schemes, each in turn, in outpost and reconnoitring work.

Instruction in the subjects dealt with in the preceding paragraphs should be carried out on the following system:

(1) The individual should be instructed first of all. This can only be done in troops. Officers commanding troops should commence by training eight or ten of their most intelligent non-commissioned officers and men in map reading, patrolling, delivering messages, etc. (as ordered above), supervised by squadron commanders.

(2) The most intelligent non-commissioned officers in a squadron should be further instructed by the squadron commander himself (or by one of his troop leaders who shows great aptitude for this kind of work) in reconnaissance and sketching.

(3) Practice of the whole squadron in reconnaissance and outpost duty, as ordered in the Syllabus of Squadron Training, third week, "Cavalry Drill," p. 654.

It is recommended that ability as a patrol leader and reconnoiturer should be considered as one of the most necessary qualifications for a non-commissioned officer to possess before promotion to the rank of sergeant.

Individual instruction in reconnaissance will be carried on during the winter months, and commanding officers will decide when and how much instruction is to be given. The standard of efficiency to be attained by non-commissioned officers and men has been indicated above; it rests with officers commanding regiments to arrange that the right means are adopted to attain the required end. It is recommended, however, that squadron instruction in reconnaissance should be carried on from about October 20 to December 8, and from January 8 to February 24, by a wing at a time, at the rate of about three or four lessons per week. On the conclusion of each period of instruction, the commanding officer of the regiment, or second in command, will test practically in the field the value of the instruction given, and will also examine indoors in every detail subaltern officers and non-commissioned officers.

Great attention must be paid to the practice of transmitting information and delivering messages. With the object of making the men quicker and

more intelligent, the sender of a written message should always inform the bearer of the terms of its contents, while the officer receiving such a report should invariably make the bearer repeat the contents of the note before opening it.

It is only by proceeding in a rational and systematic manner that results of any value are to be obtained.—*United Service Gazette.*

MASSACHUSETTS VOLUNTEER MILITIA.

A sensible thing was done when the state designated its voluntary force as the "Massachusetts Volunteer Militia," instead of "National Guard." The army is the true National Guard. The militia is primarily and ordinarily a state force. It becomes a national force only when united with and used in the same manner as the army under a call from the President for national defense. On sentimental grounds the term "National Guard," foreign in its origin, implies a resemblance to the National Guards of France, which have too often in the last hundred years furnished, unfortunately, an awful example of what soldiers ought not to be.—*Col. Thomas F. Edmunds, New England Magazine.*

POSITION FINDERS.

About three years have elapsed since the inhabitants of Plymouth, Portsmouth, and other coast towns were puzzled by the erection of a number of sentry-box-looking brick structures in the vicinity of forts and batteries, whose doors had strange cabalistic figures traced upon them, denoting their connection with some mysterious system in process of development. Within the past six months these mysterious "sentry-boxes" have been linked to one another and to the adjoining batteries of heavy guns by electric cables laid in "conduits" beneath the surface of the ground, the whole branching off from a central directing station in the fortress. The larger of the two classes of brick buildings are the size of a small room, and are roofed with strong iron girders and masonry to render them as near bomb-proof as possible. They are designed for "position-finding cells," under the new system, and a large number of Watkins' position-finders have already been placed within them and connected up with the cables. The position-finders are divided into several classes according to range. The smaller ones, which represent the majority hitherto mounted, have a radius of 10,000 yards, and can accurately follow and determine the precise position of a vessel approaching from any direction within that area of approximately six miles. A telescope about 18 in. long is pivoted centrally above a paper plain upon which is a pencil-point, the movements of which synchronize with every turn of the telescope. The paper plain represents the area over which the telescope ranges, and when the glass is focussed upon any object—such as a vessel in the offing—the pointer points to its representative position on the chart below. But the telescope is also associated with an electric motor, so as to have the power of following automatically the motion of the vessel it is laid on, and an accelerating or reducing influence can be applied to this mechanism by turning a handle in order to effect the following movement with precision, the range being also automat-

ically maintained by a second handle which controls the focus. Hence an accurate "prediction" can be made on the paper chart of the probable position of the moving vessel after a definite interval, and—instructions being electrically transmitted to the group of guns with which the position-finder is associated to lay upon that spot—after the guns are laid, nothing remains but to follow with the eye through the telescope until the doomed ship reaches it; then the guns can be fired by signal to the battery, or automatically by a contrivance upon the position-finder itself. All this seems very easy, but the direction of the instrument and the adjustment of power, which is of course controlled by the handles alluded to, is a very delicate matter, and requires considerable experience and practice. We are glad, therefore, to learn that all artillery officers up to the rank of major are being put through obligatory courses of position-finding in the newly-constituted "cells" upon our coast defences both at home and abroad.

The large position-finder has a radius of 50,000 yards, or practically 28 miles, and is fitted with a very large telescope and a much more powerful mass of mechanism; but it is worked upon the same principle as the smaller instrument, and has a similar chart or paper plain below, representing the arc covered by the telescope in its travel. It is designed for following the movements of an approaching fleet, and will be of inestimable value in determining the period which must elapse ere hostilities can take place. It is eminently satisfactory to know that the arrangements for the conduct of observations from our position-finding cells have been so thoroughly perfected, and to feel that every round or salvo from our coast batteries is likely to tell in a prospective action, but the unfortunate part of the business is that there is a likelihood of more position-finders than long-range guns being *en évidence*. The numbers of heavy breech-loading guns mounted around our coasts might almost be counted upon our fingers and toes, and it is only for these, and for the converted 9-inch howitzers—of which there are, we believe, about 25—that the position-finder has any *raison d'être* at all. There is food for reflection in this fact.

A WINTER BIVOUAC.

From a report on winter manœuvres which took place on Feb. 3 and 4 near Kietzy, Russia, at a temperature of from -4° to $-14^{\circ}\text{C}.$, and during a sharp northeast wind, we give the method of bivouacking. Upon arrival at the place of bivouac the snow was removed from the ground and 4 "Jurten" were constructed per company from the sections of the field tents. The "Jurten" were banked with snow and a fire was built in the middle. Branches were placed on the ground and covered first with a layer of straw and then with straw mats carried for the purpose, on which the men slept. Two and a half hours after the arrival of the troops the fires were burning in the "Jurten"; the temperature soon rose and remained during the night at from $+6^{\circ}$ to $+11^{\circ}\text{ C}.$ Part of the officers bivouacked in the ordinary field tents made of double sections and banked with snow, part in "Jurten" like the men. The experiment demonstrated that "Jurten" are to be preferred.

RATES OF COMBUSTION OF EXPLOSIVES.

According to Monsieur P. Vieille, the speed of combustion of certain explosives is as follows:

Nature of Explosive.	Densities attained.	Combustion Speed per second.
A. Black or Brown Powders.		
Mining powder.....		5.09
Brown " (French).		4.45
" " (German R. W. P.).		5.70
Black " (French $\frac{1}{2}$).	Superior to 1.900	8.50
Common French sporting powder.		9.48
Fine " " " " "		13.74
B. Colloidal Powders.		
Pure cotton powder (German).		5.89
Cordite (English).	Bordering upon 1.600	20.49
B. N. Powder (French).	1.600	7.58
Ballistites (Nobel's).		20 to 40
C. Various Explosives.		
Nitromannite	1.765	23.3
Diphenylene hexanitrate.	1.620	6.19
Picric acid.	1.708	5.32

The above represents the mean speeds of combustion at pressures between 100 and 2500 kilogrammes per square centimetre. All the powders, except the colloidal, were first pulverized and sifted through silk gauze; they were then compressed into grains of known dimensions under known pressures, so as to insure their combustion by parallel surfaces.—*Arms and Explosives.*

LEONARD SMOKELESS POWDER.

According to the English patent No. 20,066, October 24, 1893, Mr. M. E. Leonard's powder consists of nitro-glycerine, gun-cotton, lycopodium, and a neutralizer of free acid, such as urea or dinitro-benzol. The most satisfactory proportions for the United States army .30 calibre rifle are found to be:

Nitro glycerine.....	150 parts by weight.
Gun-cotton.....	50 "
Lycopodium.....	10 "
Urea crystals.....	4 "

For great guns, where a further deterring and moisture-proof effect is desired, 7 parts by weight of cotton-seed oil are added to the above-named ingredients.—*C. E. Munroe in Naval Institute.*

Comment and Criticism.

I.

"The Preliminary Examination, West Point."

Professor P. S. Michie, U. S. Military Academy.

To Lieutenant Willcox, we must award the highest praise for his masterly treatment of this perplexing question—the preliminary examination for the U. S. Military Academy. His facts and statistics are very convincing and most valuable, and his conclusions ought to satisfy every one that any reasonable increase in the standard for admission will not be detrimental to any class of boys nor to any section of our country.

If our members of Congress would fully comply with that requirement of the law which provides that the appointments be made a year in advance of the time of admission, and if they would be guided in making their selections by the conditions stated in the general qualifications, the evils which at present exist would be largely removed. These qualifications are:

"A sound body and constitution, suitable preparation, good natural capacity, an aptitude for study, industrious habits, perseverance, an obedient and orderly disposition, and a correct moral deportment are such essential qualifications that candidates knowingly deficient in any of these respects, should not, as many do, subject themselves and their friends to the chances of future mortification and disappointment by accepting appointments at the Academy and entering upon a career which they cannot successfully pursue."

At the preliminary examination held last month, of the candidates who failed in arithmetic, there were fifty-five who did not make 50 per cent. of the maximum mark in that subject; and of these thirty-eight made less than 40 per cent., and sixteen less even than 20 per cent. Several candidates failed to pass in reading, and some in every requirement. In the three pages of writing from dictation the number of misspelled words ranged from 60 down through 40, 30, 23 and so on.

To the paragraph quoted, what attention could have been paid by these candidates? What possible explanation can be given of the reason of their selection? A passing glance at the qualifications set forth in the War Department circular, followed by the most meagre inquiry into the qualifications of any applicant, would have certainly excluded the greater number of those who failed at the last examination, and especially the fifty-five referred to above. When a man of ordinary intelligence thinks of making an investment, or of entering upon any enterprise, he makes some inquiry, exercises some discretion, and seeks some information and advice before he decides upon his course of action. In the above appointments there are the written facts to show that no attention could have been paid in determining the question of fitness of the candidates selected.

It is also a curious anomaly that there are plenty of candidates who willingly seek these positions, and who must know that they are entirely unfitted and ill prepared for

the examination. They take the chances that something will turn up, and judging from the results, their hopes are so preposterous as to be simply astounding. A break is made in their usual mode of life, they are at considerable expense for the journey, and they undertake a task for which they have not the slightest chance of success. Why is it? Why are they not forewarned? Is it due to the chivalric illusions which the story of the rebellion has fostered? Who can tell how many boys have looked forward to political life with Abraham Lincoln and the Presidency as their type and goal? Or if their patriotism has been influenced by the romantic stories of Grant and Sheridan, they believe that they, too, could do great deeds if they could enter West Point. They read that these great soldiers came to the Academy poor and ignorant and succeeded, why not they? Unfortunate youths! their high aspirations are soon stifled by the rough experience of actual life, unless they are kept alive by industry, talent, perseverance and solid attainments.

Now, the problem of the entrance examination is in reality very simple. We have a course of instruction which has been formulated by law and regulations. It must be mastered before a cadet can be graduated, and it must be done in four, or at most in five years. What are the necessary qualifications that a boy between 17 and 22 years of age must possess to do this work in the given time? Those who are well grounded in the common school branches and have studied a portion of a high school course have a fair chance of success: if they are industrious and have good aptitude they will certainly succeed. Boys who have not been trained to study, who have been away from school for some time, are dull with books, and have little aptitude, cannot possibly succeed even if they have the most perfect physical proportions. The modern science of war demands a thorough fundamental course in the elementary sciences and an application of their principles in fortifications, ordnance, gunnery, engineering, etc. The Military Academy is established for a particular purpose; not to laboriously train up indifferent boys, but to apply its processes to those who have such sufficient preliminary attainments as to give promise of future valuable service to the country. Give to it boys of fair mental capacity, good physique, and above all high moral character, and it will return them to the country the noblest types of soldiers, to whom the people may safely confide its highest honor and its dearest liberty. It was for this purpose that Washington so strongly advocated the establishment of a Military Academy.

First Lieut. L. G. Berry, 4th U. S. Artillery.

Before proceeding to a discussion of its subject matter, I wish to express my appreciation of the exceedingly aggressive character of the lecture. Lieut. Willcox has treated this martial subject in a truly martial manner.

The lecturer has also shown rare moral courage in taking into consideration sectional matters and the color question.

He has handled both questions fearlessly and well. In these respects he has reminded me of a certain fisherman:

" His po'e was made of a sturdy oak,
His line was a cable that never broke,
He baited his hook with tigers' tails,
And sat on a rock and fished for whales."

Like the learned professions, law, medicine, art, letters and engineering, the military profession requires a long novitiate. Like these others, this novitiate includes mental, moral and physical training. When completed he is able to endure the hardships of the march, the cold of winter and the heat of summer. He is just, honest and honorable, and loyal to his country; he is sound in judgment and skillful in his particular branch of the service.

Not a little of this training he receives at the Military Academy, but not all ; it neither begins nor ends here. In a moral sense his training begins at his mother's knee, when the mother, with kindness and charity, explains the sinfulness of the untruth, or whips the little hands that refuse to recognize the rights of property.

So on the day of his entrance to the Military Academy, when the authorities take the place of the parent, we assume that the moral and physical training has progressed a long way toward its completion, and we require of him the moral and physical development suitable to his age. Do we require the same with respect to the mental equipment ? It is certain that we do not. Yet it would be no more absurd to revert to the mother's knee period in learning than to revert to the same period in moral training.

In the State of New York the school age begins at five ; the boy then goes to the primary school or kindergarten or receives instruction at home. Let us suppose that he goes to the public school. The ward or grammar schools in the villages and cities usually contain eight rooms, each requiring one year. So that thirteen is the normal age of graduation from the grammar schools. This is usually accompanied by passing the Regents' Examination, which corresponds very closely to the preliminary examination as now established. By inquiry I find that over one half of the 1st and 2^d sections of the present 2d class in mechanics ceased to study the common branches at that age ; and among that number were included the seven cadets at the head of the class.

In the country districts the school year is shorter, but on the other hand a bright student makes more rapid progress. Allowing two years retardation, fifteen should be the age of admission if the present standard prevail.

Very few would advocate the reduction of the age of admission, and the alternative is to raise the standard of admission. The only question which remains to be considered is : Are there sufficient facilities throughout the country for the study of algebra, etc.? This question Lieut. Willcox has answered in a thoroughly conclusive manner.

To my own personal knowledge the data which he has given are incomplete as regards the State of New York, in that instruction in algebra, etc., is frequently given in the schools classed as primary schools. But this only makes his case the stronger.

The inevitable conclusion is that reached by Lieut. Willcox that the Military Academy must be allowed to recognize the work of the high schools of the country ; that it must be allowed to take up the work where they leave off.

When this shall have been done, and when the post graduate schools take up their work where the Military Academy leaves off, then, and not till then, may we be said to have a *system* of military education.

II.

"The Military Academy and the Education of Officers."

First Lieut. W. P. Richardson, 8th U. S. Infantry.

IT is not my intention to examine the merits, as a whole, of Lieut. Hubbard's paper on the Military Academy, which appears in the January number of the JOURNAL. His views have been ably discussed, and in the main fairly criticised in the issue for March, and both the original paper and the comments are full of matter interesting to every graduate of the Military Academy.

We all have the interest of the Academy at heart, and whatever be our differences of opinion upon details as to the best means of accomplishing the desired end, we are nevertheless united, I feel sure, in our sentiments as to what that end should be, viz.: the graduation of a class of young men well grounded professionally, well toned morally, and with the fullest possible equipment of general education and information that the conditions imposed upon the Academy will admit. It is

not sufficient and not satisfactory to the average graduate, to point, as has been the custom for years, to the results which the institution has accomplished under the system in vogue, but it is pertinent to inquire seriously if these results have been the best possible with the means at its command. It is but fair to ask if they are all that could be expected ; considering what West Point should accomplish with the youth of the whole country to draw upon, although we know the selections are not always made in the best possible manner ; but with an almost unhampered power of selection and elimination here ; with a relatively large number of professors and instructors to the number of students taught ; and with the support and financial backing of a great nation.

A proper examination of this question would open discussion upon the entire subject. This, as I said at the outset, I have no intention of doing. But there are two or three statements in the original paper which I wish briefly to deal with, not so much on their own account as in connection with certain comments in the March issue, emphasizing their soundness, and adding further suggestion along the same line.

For convenience I will give all the quotations together. Lieut. Hubbard says : "It is believed that Spanish and Drill Regulations can be omitted with positive advantage." I omit noting here the argument he advances in support of this, intending to refer to that later. Further on he states : "The young officer now (during temporary assignment after graduation) should learn practically, and under a regular system, the company and post administrative duties. The teaching of these matters belongs properly to the Army and not to West Point. Criticisms of West Point are not infrequent to the effect that the cadet should be taught how to make out the various company and quartermaster papers. * * * The attempt is now made to teach some of these administrative duties by lectures, but a young graduate recently said that he learned more about company administration in a few hours passed in the company office than in all the time he had spent at West Point, in attending lectures on the subject and writing them up."

Captain Pettit, JOURNAL for March, says : "Spanish and Drill Regulations might be omitted from the course without much injury. I would also omit say one or two mathematical recitations per week and introduce German. * * * Spanish is of no use from any point of view. * * * There is no doubt but the so-called instruction in quartermasters' and other papers is worse than useless, and I have always been of the opinion that the hours spent at 'heavy manœuvres' in Fort Clinton were worse than wasted because they could be devoted to so many better things. * * * I mention these two details which * * * are almost always the first things selected for criticism by graduates, because they are so palpably weak and useless. The one department in need of radical change, and which can be effected without outside assistance, is the Department of Tactics and Discipline." These views, while not supported by the other commentators save in one partial admission, and not held by a sufficiently large number of graduates I think, to make their adoption by any means probable, are nevertheless, by reason of the publicity given to them, entitled to some special notice ; particularly those relating to the Department of Tactics and Discipline. One more quotation, however, from Captain Pettit, which finds, for half the statement at least, its strongest support in his own remarks just quoted above : "It (West Point) is unique in this, that it receives more abuse and injury from its own graduates than any other educational institution in our land, and more praise and admiration from sister schools." This statement is notably true of the Department of Tactics and Discipline, which has so far as my observation goes, been the most extensively criticised of any of the departments of the institution—"has received more abuse and injury from its own graduates"—and it is the one department, on the other

hand, and the only one in recent years, which has generally received praise and admiration from sister schools. In fact this department (it would be better to say system, as applied to discipline, within which the Department of Tactics lies, as its principal-factor and support) is the only feature which separates West Point prominently from other institutions, and is almost the sole one upon which she can successfully base any claim to special distinction or superiority. She may, and does, claim a greater amount of work done in all directions within a given time than is done at other schools, but she owes this claim entirely to her system of discipline, which, while it finds naturally in such an institution, its chief promoter and its executor in the Department of Tactics, nevertheless depends for perfection in its details upon the united efforts and constant attention of all the officers at West Point, as well in the section room as upon the drill-ground, and in all their duties and relations at the post. Every officer stationed at West Point is at all times on duty in this department, in so far as taking cognizance of, and bringing to the notice of the proper authority, all violations of regulations by cadets which may come under his observation.

It is worth while to note here the fact,—well known but often overlooked,—which should argue in favor of the comparative excellence as a whole of the Department of Tactics and Discipline, that all the officers who return to the Academy as instructors in this department, as well as most all who return for duty in any capacity, have, during the interval between their graduation and return here for duty, been associated with troops in the service, and have developed and added to the ideas of tactics and discipline imbibed as cadets; while on the other hand, a considerable percentage, if not the major part, of the instructors who come back in other special academic departments, have, in those special departments, added but little to their store of information gained in the course here. I have observed that it is a belief, perhaps excusable, in the minds of most graduates of a few years service, that, whatever may be their qualifications as instructors in special branches of academic learning, there is no doubt but in the Department of Tactics, and as instructors in discipline, they could score success. It is a belief, as I said, perhaps excusable, and even justifiable, for we certainly have among our graduates a much larger number of good soldiers than we have of good mathematicians, of good chemists, or of good linguists. This inner consciousness of ability, coupled often with a most earnest desire to make a trial of it at West Point, underlies, in my opinion, a great deal of the intemperate criticism, and is responsible for most of the abuse along this line.

It has been a practice among graduates to charge, more or less seriously, to the account of the Tactical Department everything which goes amiss outside the recitation room, and often inside it; from the obstreperousness of any individual cadet to the smallest details of bearing and deportment; and often for the conduct of the young graduate after joining his regiment. If a young lieutenant asserts that he never learned anything about the calculus or polarized light, he is rather applauded by his older companion graduates, who are pleased perhaps to have company; but if he fails in proper respect to his superiors, or displays ignorance of the Drill Regulations, or of any of his minor duties as a subordinate, there is much ado and abuse of the Academy, and particularly of the Tactical Department. "They don't turn out such men as they did when we graduated." The Tactical Department may enforce obedience and administer punishment, and may develop and discipline the character, but it is no more able to supply those elements essential to the making of a good soldier than the Academic Departments are to supply understanding. It has its particular function in the organization of the Military Academy, and its own separate schedule of work and practical instruction—not so rigidly outlined perhaps as in other departments, but clearly enough defined—and this work, I hold it has performed under the system hitherto

existing, with much success, and to the great credit of the institution. Doubtless there is room still, and must always be, for improvement, and in some respects this has never been denied even at the Academy, as, for instance in the extending of the instruction, if time were available, into the domain of strategy and minor tactics. But a "radical change" is alleged to be necessary.

Capt. Pettit suggests as a starting point for this "radical change" the omission of the "So called instruction in quartermasters' and other papers" as being "worse than useless"; and the saving of the hours spent at "heavy manœuvres" in Fort Clinton, being now "worse than wasted, because they could be devoted to so many better things." The so called "heavy,"—better styled, mechanical,—manœuvres are practiced during July and August, and occupy cadets' time as follows: from 9 to 10 A. M. cadets of all classes go to drills of some description, principally artillery, and small-arms practice, and a certain number to instruction in practical astronomy. After the details have been made for all other prescribed exercises the remainder of the 1st class, amounting sometimes to five or six men, and sometimes to as many as ten, go to the manœuvres. These details alternate, and result in sending each cadet of the class to this drill about once a week or perhaps five or six times a month, a total of twelve hours at most of the summer.

The vast importance of saving these hours to the department for other purposes is not apparent; while the instruction given, viz.:—upon how to dismount and mount guns, and how to handle heavy weights by means of machines and tackle; the use of blocks and tackle in these exercises, and in raising a flag-staff or mast from the ground to a vertical position—it is believed by the administrators of the Academy may prove useful to cadets afterwards in whatever branch of the service they may go. There is no more reason for transferring this instruction to Fort Monroe, as suggested by Capt. Pettit, than there is for transferring any other practical instruction in siege or sea-coast artillery.

The "instruction in quartermasters' and other papers" is "so-called" only by Capt. Pettit, and others who apparently do not know what is being done.

There has been no attempt for several years to teach cadets "how to make out various company and quartermaster papers," and the instruction referred to is designated as "short lectures upon post, company and staff administration."

It is well known that throughout the line of the army, particularly in the West, it has for years been a criticism, amounting to a reproach upon the Academy, that young graduates reported for duty with their regiments entirely ignorant of the simplest principles upon these subjects. The conditions which justified in a great measure this criticism are so well known as scarcely to need going over. Sometimes the graduate upon joining found himself in command of his company, and occasionally even in the field, and it very often happened that he was sent to some small and remote post and detailed immediately as a post quartermaster, adjutant, or commissary of subsistence. Now the conditions of the service are changing, and such responsibilities are not so apt to fall upon him, and it may be said that the remedy is being introduced after the chief necessity for it has practically ceased to exist. It is worth while, however, to examine briefly the method of giving this instruction, the time consumed by it, and what it intends to accomplish. The instruction is given (I take the present year) by short lectures, or talks, from printed notes—nine in number. Formerly cadets were required to write up these lectures, and they were corrected afterward by the instructor. This requirement no longer exists. Printed copies of the notes are delivered to the cadets in advance, and on the afternoons set apart for this instruction,—one hour per week for half the class at a time,—the notes are read over, questions asked, and the hour spent in explaining such points and references as are not perfectly clear. The cadets are

directed to preserve these printed notes for their information and guidance immediately after joining their regiments. The instruction is given to the 2d class, and occupies nine hours of the time of each cadet, extending over about four months in winter, or if the cadet reads the notes of each lecture over carefully, as he should, beforehand, then perhaps half an hour more for each one. The object in view is to give the cadet some idea of the different departments of the army organization, and of the company administration in particular, and to indicate to him in a general way the character of the duties he may be called upon to perform in the first years of his service. It is to be borne in mind that if a cadet does not receive some information of this kind here, and some advice for instance about the care of Government property and money, he joins the service often not only wholly unprepared for duties and responsibilities which may be at once imposed upon him, but unfamiliar even with their very definition. I think it is a mistake to assume that he will be instructed in these duties in the "company office" after he has joined the service. He finds them out generally, as most of us did, by asking the first sergeant, or through the friendly assistance of some brother officer a year or two before him, but the information is often gained after some embarrassment or humiliating experience. It must be maintained that the time devoted to this purpose here, without any additional labor or study to speak of on the part of the cadet, is not wasted, and that the information given is most useful to him when he becomes an officer. It would be a manifest advantage could the instruction be given to the first class in the months just before graduation, instead of to the 2d class, at a time, when, as yet, they have given but little thought to anything beyond mastering the regular academic course.

Recitations in Drill Regulations have been argued as unnecessary, I suppose, for the reason that cadets learn a great deal about the regulations of the different arms in attending the four years drills, and because an officer has so much time to devote to the subject after graduation.

The practical instruction given in the drills here is perhaps sufficient for non-commissioned officers and privates, but to make capable cadet officers, who command platoons, companies, and the battalion at infantry drill, and who aid thereby greatly in the instruction of others; and to prepare the cadet to command sections and platoons at artillery drill, and platoons and troops at cavalry drill; some study of the drill book is necessary. This, while he is still a cadet, and for purposes of instruction here, and it gives him additional confidence later, when in the performance of similar duties as an officer. These recitations are had for the 2d class, preparatory to their entering upon the duties of captains and lieutenants in the battalion, and becoming available as 1st class men, for detail in various subordinate capacities involving the exercise of command. It would be a great benefit here also if the instruction could be given later in the same year, during the months of April and May, instead of during the winter as now, for artillery and infantry and in conjunction with the practical outdoor work going on at that season. Lieut. Hubbard states that this subject is studied principally for the marks it gives. The same may be said, and truthfully as regards many cadets, of any other subject studied at the institution, and I think it is perhaps less so in the case of the Drill Regulations than in any other. This little manual, each for its own arm, together with the brief outline given in the lectures upon post, company and staff administration, comprise the foundation of all the duty in prospect for the young graduate. West Point, in addition to its character as an educational institution in branches of learning not military, is essentially a training school, and a school of discipline in all respects, and it should never in any sense be converted, even partially, into a school of application as we understand the term; yet, so long as its diploma entitles a young man to a commission in the army, it should not fail to give him some

idea of how to begin his career and what is in store for him. It should prepare him for some of the duties of a 2d lieutenant, as well as for those of high command.

The remark quoted by Lieut. Hubbard of a certain young officer to the effect that he had learned more about company administration in a few hours passed in the company office than in all the time he had spent at West Point in listening to lectures and writing them up has no bearing upon the case. I have heard graduates make similar remarks, with reference to other subjects, as for instance: "I learned more French in a few weeks in Paris, or more Spanish in one trip through Mexico, and more about mechanics and astronomy from a book of elementary principles and simple statement of facts prepared for children, than I did in all the time spent upon those respective subjects at West Point." Such remarks, if they are to be interpreted as meaning that the cadet learned nothing of value in these subjects while here,—that he wasted the time and opportunity given him,—serve only to indicate the character of the individual making them, and go to show that the Academic Board with all its care is not infallible. It occasionally misses its man and allows him to slip through.

Altogether the criticisms and comments upon the Departments of Tactics and Discipline in the cases cited, particularly those of Captain Pettit, seem somewhat unreasonable. What the department needs is, not a *radical change*, but a little more time for work properly within its province; and a more appropriate season for certain instruction, if it could be obtained without manifest detriment to other departments. Then certain modifications in detail, and improvements now recognized as necessary, would naturally follow.

The statement that Spanish is of no use from any point of view seems to me inconsiderate to say the least. I have strong convictions upon this point but, saving a few remarks, I will leave the defense of the department to those who are on duty in it here, and who, if they wish to undertake it, are much better prepared to make the defense than myself. The subject has been brought up repeatedly before the Academic Board in discussing changes in the course, and Spanish has always held its position. The conditions which argued for its introduction into the course originally still confront us, and the argument is just as strong. That we are, at the moment of writing this, in the way of a serious complication with Spain over the *Allianca* affair, and a possible resort to arms, where surely a knowledge of Spanish would be of value, is not beyond taking into account. A Spanish speaking country lies adjacent to us on the South, and with the exception of Portuguese, the Spanish language is practically the only one, besides our own, spoken in all the Western hemisphere.

I do not hold German in light esteem, nor do I overlook the value of its literature, but there is a strong tendency I think to overestimate its value. The relative importance of German and Spanish in the mind of the graduate, viewed from a strictly professional standpoint, instead of from a general educational one, will depend upon whether he anticipates service on the Texas or Arizona border, and looks forward to extending his information and experience to the Southward in our own continent, and in the Central and South America countries, with the possibility of active service in some of those countries, or whether he expects to study and utilize especially the military works in German, and travel, or go on detail, abroad. Personally, and speaking I think for a large percentage of the officers of the line, I should like to see German introduced into the course; not in lieu of Spanish, but of some portion of the course of applied mathematics, provided the Academic Board could see its way safely to approve such an arrangement. The three months time given to Spanish, as now in the 3d class course, following immediately the completion of the course in French, is sufficient, with the advantage of the previous training in a language similar in many respects, to acquire a very fair proficiency in Spanish, but such would not be the case

with a new and entirely different language, as German. To get time for a proper study of this, some other portion of the course would have to be omitted.

This might be done by a division of the classes at the end of the second year, and I have an idea that this plan has been considered in the past, but has never found favor in the eyes of the authorities here. Why it should be so I am at a loss to understand, bearing in mind "the greatest good to the greatest number"; and why it has been deemed advantageous to carry the entire class through to the very end along lines of foundation, upon which, under the limitations of our service, but a small number are able to build successfully thereafter. I hold that an injustice is herein done to the greater part of every class, for the benefit of a certain select few, who are designed for a special corps, wherein they are to have more pay and promotion, and enjoy privileges and reputation throughout all time, based on a four-years' graduation; and that mainly upon one branch of education. The answer, "mental discipline," rings in the ears of every graduate, and the words are stamped upon every stone of the Academy, but I can testify for my own part that I got more mental discipline from the study of French than from the study of any other subject in the academic course. The quality of mind brought into play here—in the acquisition of languages—is a most valuable one to educate and strengthen, and it has a wider application, and depends less upon some inherited natural tendency than the mind which grasps mathematics. I have not the space to go into this subject here but I think it can be shown that mathematics is the only branch of education in which the progress and acquirements, for the average intelligent student, bear no reasonable proportion to the opportunities afforded and to the amount of good honest work done.

Aside from a division of the classes the only apparently feasible remedy for crowding and congestion in the courses, which, by the way, I consider much exaggerated, and the only way to make room for the introduction of new matter, is to raise the standard of admission. This is the one remedy upon which most, if not all graduates, seem agreed.

Lieutenant Willcox has made a most able argument in favor of this plan, showing the reasonableness of it, and pointing out the advantages to be gained, in a paper read before the West Point Branch, and published in the JOURNAL for March. If we are united in sentiment upon this subject let us be so then in action, and once the conservatism of West Point is overcome in this respect, we may hope to so regulate the entrance examination for the future, in connection with the final requirements of an officer's education, as to keep the course healthy, and free from the charges of strain and overwork now so frequently brought against it.

First Lieut. W. C. Brown, 1st U. S. Cavalry.

Lieut. Hubbard's article on the Military Academy in the January number of the JOURNAL, is certainly one of the most interesting and well digested articles on this subject which has appeared for several years, and while all may not agree with him in the methods of relief which he suggests, his admirable essay deserves careful consideration.

As to the curriculum of studies, it would seem proper to bear in mind that in the operations of war the officer cannot, as a rule, deal with certainties; but with chances and probabilities, and should cultivate the faculty of quickly, and more or less accurately, weighing matters which come before him, and deciding without hesitation on the side which offers the greatest number of chances of success; hence anything which serves to educate the powers of observation, and judgment of the cadet, should be fostered, even to the exclusion of those studies which serve mainly to strengthen the mind.

Each head of a department at the Military Academy, imbued with a most laudable

ambition to give the cadets under his charge a most thorough knowledge of the studies in his department, is prone to retain all of the cadet's time which has been allotted to him by his colleagues on the Academic Board, and be ever on the alert to secure more, when, from any cause the Academic curriculum is disturbed. It therefore naturally follows that the head of a department who is the most aggressive, and has the happy faculty of presenting the claims of his department in the most forcible manner, is the one who is apt to come off victorious in the general clamor and eager contest for more time. That such influences have had a marked bearing on the curriculum at West Point I do not think can be gainsaid.

The recommendation, however, that the entire matter of re-arranging the course of study be given to a commission seems to be decidedly radical. If West Point were a failure, extreme measures might be advisable, but as it is one of our most successful institutions, which we would all like to see improved, I should not feel over sanguine of good results if a commission was set at work tinkering with it. There has been a great deal of tinkering with the army within the past few years, and there are some of us who think that no little harm has been done by it.

There is no question but what the courses of study at West Point, and those at the service schools should be in harmony—the latter should take up the education of the officer where West Point leaves off, and it is thought that if the commanding officers of these schools were *ex-officio* members of the Board of Visitors, in the place of four of the seven civilian members now appointed, much good might result; this would still leave three places on the Board to be filled by distinguished civilians.

Doubtless the original idea of having so large a proportion of the Board composed of distinguished civilians was to popularize the Academy in days when there was a larger element in our population hostile to West Point than there is to-day. The institution is now sufficiently in public favor so that the composition of the Board might safely be changed to a more useful one.

There is no doubt but what the course—when the average mental capacity of cadets secured under our present system is considered—is overcrowded, and here the effect of a low standard for admission, with a consequent large proportion of poor material, is most painfully apparent.

Our standard for admission is very low when compared with Woolwich, Sandhurst, and other like institutions abroad, and this notwithstanding the fact that we pride ourselves on having the finest system of public schools in the world. Let there be a higher standard for the entrance examination, including at least algebra and geometry, so that the material secured will average better, and we will hear fewer complaints of overcrowding.

The cadets in the upper third of each class seem to master their tasks without injury to the health, and if one consults the delinquency lists it will be seen that many of these young gentlemen find time for other occupations than their lessons during study hours as well; but cadets in the lower sections are pushed to such an extent that they are unable to thoroughly comprehend and digest many of the studies, even though the more difficult parts are omitted.

Brighter candidates would be secured by requiring that all be selected by competitive examination. Whatever may be said against it, the fact remains that no other system of appointment is so thoroughly in harmony with the spirit of our institutions, and Lieut. Hubbard points out so clearly its advantages and the method which should be adopted when Congressmen fail to nominate, that but little more can be said on this subject.

Some years ago I caused to be compiled from records at the Academy the percentage of failures among candidates who had received their appointments after competi-

tive examination, and also the percentage of failures among those whose appointments had been given directly and without such examination.

In each class it was found that there was a smaller percentage of failures among the competitive men. Again the percentage of failures during the four years' course among men who had passed the entrance examination successfully was computed with the result of a more favorable showing for the competitive men in each class. Putting the two together it was found that of candidates reporting at the Academy with appointments secured by competitive examination, 47 per cent. finally graduated, while of those to whom appointments had been given directly, but 25 per cent. received diplomas. This data was taken from a series of something like eight consecutive classes, and so may be considered as a fair test of the competitive system.

In order to relieve the pressure due to overcrowding of studies, Lieut. Hubbard would have us drop Spanish and Drill Regulations. In the former recommendation probably most graduates will concur, for the time spent on that study seems to be all out of proportion to the benefit derived; but it is believed that it will be a sorry day for West Point's reputation of having the finest drilled body of men in the country, when the theoretical study of the Drill Regulations is omitted. Drop the Drill Regulations from the curriculum, and the result will soon be apparent on the drill ground.

The splendid drill of the battalion of cadets has always been a source of pride to all West Pointers, and it is to be hoped that the War Department will allow no steps to be taken which will jeopardize the high standing of the battalion of cadets in a matter so purely military as that of drill.

We are told, however, that much of the purely technical parts of the present course should be taught at the service schools, and it would seem that the question might fairly be asked if the subject of permanent fortifications does not come under this head. It must be admitted that it is desirable that every graduate should have such a general knowledge of this subject as might be gained by a few recitations, and especially by a limited number of lectures well illustrated by models; but it is questionable whether the conditions existing in our service are such as to make it advisable for cadets to take a course in permanent fortifications which, I am informed, requires, including review, some twenty recitations, and in addition to this mechanical drawing on plans of fortifications, three hours a day for a month or more. Might not much of this time be better spent in acquiring information which all, or a majority of graduates, would probably have to apply in actual service. We must bear in mind that if a permanent fortification is to be constructed it will not be superintended by a line officer, but by an engineer officer especially selected for the work; hence it would seem that the more technical parts of this subject might well be dropped from the West Point course to be taken up at Willet's Point, along with torpedo instruction, and other subjects which are purely technical, and which require much time and study to become even fairly proficient in them.

Lieut. Hubbard "hits the nail on the head," when he tells us that in the army we are too much given to theorizing—a criticism which might not unjustly be made to some of the military training at West Point. While fully appreciating the value of the theoretical part of the curriculum as a means of mental discipline, it seems to me that this has been carried to such an extent that the requirement that the cadet be instructed "in the practical duties of the soldier in the three arms," has in some respects been sadly neglected.

The greater number of graduates in each class are assigned to the infantry and cavalry, and it would seem but right that the practical duties of these arms receive a fair amount of attention. No criticism can be made of the drill in these arms as now

given ; but of the *field equipment* and *field duties* of infantry and cavalry, cadets are most woefully ignorant, and it is believed that if the members of the Academic Board could actually see some of the ludicrous mistakes into which young graduates assigned to infantry and cavalry have fallen—due to lack of instruction which might easily be remedied at the Point—they would correct the matter without any prodding from outside sources. The Drill Regulations provide that troops be frequently drilled equipped in full marching order. Can a cadet be said to be proficient in all the practical duties of a trooper, and infantryman, who has never mounted a horse with saddle packed for the field, and who has probably never even seen an infantry field equipment? This instruction might readily be given, with practically no loss of time, by having these equipments on hand in each cadet company and requiring cadets to turn out at an occasional battalion drill and inspection equipped as infantrymen in full marching order. The use of the various articles of equipment should be thoroughly explained to them by the tactical officers. Similar measures should be taken to familiarize cadets with the equipment of the trooper. They might not look so trim and neat—"smart" as the English call it—on these drills and inspections, but they would thus form a far more accurate idea than they do now, as to what a soldier can and what he cannot do, when in a field equipment—information which may be of no little value to them in later years. Instruction in the practical duties and equipment of a soldier cannot be begun too early, nor be given with too much care and attention.

In the instruction given during the encampment practical field duty is conspicuous by its absence. The importance of the infantry drill, and exercises in artillery and engineering, with which the time of cadets is almost entirely taken up during camp is fully appreciated ; but the good work should not be allowed to stop here. Surely enough time can be spared from these to allow the battalion of cadets to make at least a single march equipped as infantry, camp at a distance from West Point, and be taught how to pitch the various styles of tents used in the service. I do not remember to have ever even seen at West Point any other style of tent than the wall tent, and even this, cadets are not taught to pitch in a way in which it would be done in the field.

The first and third classes similarly should make a march equipped as a squadron of cavalry, with saddles packed by themselves under suitable instructors, each troop accompanied by a small pack train—transportation which probably has not been seen at West Point since revolutionary days—and go into camp with shelter tents. Each cadet should on this march be required to groom and care for his own horse.

The practical instruction here outlined need not take a great amount of time, and therefore need not disturb, to any appreciable extent, the course now being followed. Plenty of competent instructors can be found among the officers on duty at the Academy. The need of some such instruction is apparent in every lot of graduates who come to the regiments, and it is most important that they have at least a fair general knowledge of these subjects. Without such instruction, a graduate assigned to the cavalry may be years in service before he has an opportunity to closely examine an infantryman's field equipment, and the chances are that this will be at some National Guard encampment where his ignorance will be most embarrassing, and where it will bring looks of wonderment to the faces of the national guardsmen who quite naturally expect the regular officer and West Point graduate to be well informed on such matters. In like manner if the graduate be assigned to the infantry or artillery, he may be years in service before he knows the difference between a picket-pin and a hoof-hook, and when he is unexpectedly (and it is the unexpected which always happens) called upon to take charge of a detachment of cavalry he is most likely to exhibit ignorance which will make him the laughing stock of his men—something which

always tends to weaken an officer's influence, and operates detrimentally to discipline.

West Point fails by some eight or ten men each year to graduate enough cadets to fill all the vacancies, and yet, though each cadet takes an engagement, on entering the Academy, to serve for eight years unless sooner discharged, resignations tendered, even while on graduation leave, are, so far as known, always accepted. Is it wise economy to thus permit the Academy to be made a convenience of by those who would secure a free education, to the exclusion of young men whose ambition is to adopt the military profession for life? Let the obligation for eight years service be enforced, and that leak will be stopped at least; if then the officer chooses to resign, let him do so. He will by that time, especially if he has taken the course at one of the service schools, have sufficient knowledge of the profession to be of service to the country in the event of war.

To summarize:—Let us by all means keep hammering away at the necessity for a higher standard for admission, until Congress enacts the necessary laws; make the course a little more practical; omit some of the more difficult technical parts which graduates have little, if any, practical use for in their subsequent military careers; and above all, don't hamper the Academic Board by a commission. Search the country from end to end, and no body of men can be found who are better qualified to deal with this subject than the Academic Board, and none can be found who are more conscientious and none more desirous of keeping West Point abreast of the times, and the needs of the army at large.

Capt. Frank W. Hess, 3d U. S. Artillery.

The paper by Lieut. Hubbard on the "Military Academy" furnishes food for thought for those who are interested in the army or its school. Unfortunately for the school and the army they do not form a large proportion of our population. No one can refuse the measure of praise due this school, nor deny the fact that it has done a noble service to the cause of American education by the example it has set for other schools, as well as by the grand characters which seem to have been formed under its shadow. But a perusal of this excellent paper will raise in many minds the question: Is it not possible that West Point as a school for youths has survived its military usefulness?

It was founded when the country was young. Then and for many years after, the schools giving a preliminary training to fit young men to be candidates for the military profession were few and inaccessible to the bulk of our population. Now there is not a State, and but few localities in any of them, where schools and colleges are not accessible to all, the graduates of which know all of mathematical studies that are essential or useful as a basis on which to build a military education.

If the cadet corps was formed exclusively of those who could pass an examination on entering which would entitle them to diplomas from any of our many good colleges and universities, there could be made a change in the curriculum of our national school greatly enhancing the value of its instruction. It is not claimed that a special training to fit him for a professional career lasting four years after a young man has graduated at college is time wasted.

This whole time could be most profitably employed in learning how to apply the sciences and arts, now fairly well understood, to the requirements of the military profession which now calls for a greater variety of technical knowledge and greater versatility than any other, and in acquiring the special information useful only to the military man. Much of the work now done at post graduate schools could be done here. Application of principles, well learned, and a study of the art of how to command so as to get the best work out of the commanded would be left for the matured man (who would rarely be under 26 years) when he joined his regiment or corps.

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It is granted that "Habits of obedience and discipline are easily acquired and become habitual during the plastic period of youth," but men from 21 or 22 to 25 or 26 are yet sufficiently plastic for the purposes of obedience and discipline. This plan would help to kill King Cram whose rule few of the crammed seemed to like.

III.

"Historical Sketch of the 7th Infantry."

Major C. A. Woodruff, C. S., U. S. A.

I DESIRE to invite attention to an error in the "Historical Sketch of the 7th Infantry," JOURNAL OF THE MILITARY SERVICE INSTITUTION, page 908, first sentence, second paragraph, where it says: "At ten o'clock on the following morning General Howard arrived with part of his command, and thus saved from entire annihilation the remainder of the regiment." (Battle of the Big Hole.)

Any officer who had the honor to be present on that occasion knows that General Howard did not arrive until twenty-four hours later than he is represented as appearing on the field; and, creditable as were his efforts to reach the command, it was surgeon, not fighting men, that were needed.

General Howard himself, page 609, Volume 1. Report of the Secretary of War, 1877, says: "I was intensely anxious for Gibbon's command till I came in sight of it between nine and ten the next day. (Aug. 11th.) His wagons were near his fortified camp, his men were bathing and washing their clothes at the creek, and the horses grazing quietly in the bottom. There was no sign of an enemy in the vicinity."

General Howard's picture of peace and confidence shows that General Gibbon and his command were not saved from "entire annihilation," but securely resting on a battle field where they had suffered a greater per centum of loss than that of the Light Brigade at Balaklava, and from which they had driven the enemy after inflicting upon him a loss in killed and mortally wounded, numbering more than Gibbon led into the fight.

IV.

"Reform Needed in the Paper Work of the Quartermaster's Department."

Colonel A. S. Burt, 25th U. S. Infantry.

SIR: In reply to yours in the matter of Lieut. Palmer's article on Reforms in the Paper Work of the Quartermaster's Department, I have to say that I heartily sympathize with him in this movement and concur in his strictures on the present system.

The monthly and quarterly grind that post quartermasters have to go through, over papers, is something awful for a business mind to contemplate.

Note the two strong points Lieut. Palmer makes amongst the many.

First: This vast amount of unnecessary paper work prevents the quartermaster from attending to the proper supervision of his department, to the detriment of its efficiency and the frequent loss to the Government.

Second: That the post quartermaster hasn't a corps of high priced clerks to make up these papers.

First Lieut. E. H. Plummer, 10th U. S. Infantry.

It is frequently remarked that bankruptcy would soon overtake any individual or corporation pursuing the business methods common in our Government service. Lieut. Palmer's article, entitled "Reform Needed in the Paper Work of the Quartermaster's Department," brings the truth of this remark forcibly to mind, in connection with the business methods of that department.

How long would a commercial enterprise thrive, or survive, where 45,000 men were employed to perform service that might be performed equally as well by 2000? The principle is the same—the final result the same—where 45,320 papers, reports and returns are used to accomplish service which might be equally well, or better performed, by the use of 2640. Think of the ultimate value of the paper and cost of printing wasted! sufficient, alone, to insure, in the end, the financial ruin of anything less than a rich government. But why should there not be as much care exercised in the use and expenditure of government funds as in that of individuals or corporations?

Lieut. Palmer shows that there is, also, frequently serious loss resulting from the compulsory devoting of time to the preparation of worse than valueless reports, etc., instead of to the care and protection of valuable property.

No other bureau of the War Department is in such close and continuous intercourse with commercial business men and methods as the Quartermaster's Department, and yet, the extravagant, clumsy, cumbersome, superfluous methods of this department, in the transaction of business, must prove mortifying, harassing and exasperating to any one subjected to them who is not blinded by narrow-mindedness, prejudice and conceit; or possessed with a reckless disregard of the source of public funds and the obligation upon public officers to exercise as much, or more precaution against extravagant use than would be done with private funds.

There are two great obstacles to reform of any kind in our service. One is that curse of the army which permits office theorists to make regulations, orders and rulings for the conduct of affairs, of the practical workings of which these same theorists are totally ignorant, both from experience and observation. The other is illustrated, perhaps a little emphasized, in the spirit displayed in the following extract from a copy of an official endorsement,—which appeared in the records of a company with which I served at one time: "Nature does not abhor a vacuum more than a senior does to submit to the opinion or judgment of a junior." There is not room for doubt that there is too much of this spirit in our service, to the detriment of its best interests and to a healthy growth of improvements and natural progress, simultaneous with those outside of the service. How many of us have had a suggested improvement frowned down by a senior with "Well, we have done it this way ever since the war. I guess the old way is good enough"? Utterly regardless of the expense or labor which might be saved by adopting the suggestion. Think of the letter press copy book being practically unrecognized, officially, and transcribed copies preferred, until the year 1894! Where would have been, long ago, a commercial enterprise working with the same methods? Such action, such adherence to obsolete methods is on a par with the action of the merchants of a far western town—a natural depot and distributing point—who, upon the approach of a continental line of railroad, opposed its entrance into the town, because they had made a great deal of money when their goods were hauled over-land by bull teams, and feared that railroad communication would ruin prices and profits. The town is "side tracked" and practically dead. I am inclined to believe sometimes that if it had not been for the necessities of war we would still have flint lock rifles, muzzle loading.

What post quartermaster has not been convinced (?) that his judgment, based on

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actual experience, and often on the practical solution of a difficulty is absurd (contrary to theory), and further action must not be based thereon but on the theory of the office, hundreds, often thousands of miles from the scene of the difficulty, which is perhaps affected by local conditions unknown or ignored by the office, as are also generally the consequences of following blindly a theory !

Lieut. Palmer's suggestions are good, practical, and if adopted would, undoubtedly, prove mind, labor and money saving ; but there can be little hope that reform in the methods of any staff department will ever be made in accordance with, or even brought about by, the suggestions of post quartermasters, or those who have suffered as such, juniors and *of the line* ! Horror ! Nature's abhorrence of a vacuum would be sweet love in comparison !

However, strange as it seems, there is as yet no regulation or order prohibiting criticism of existing methods and suggestions for reform ; and multitudinous, clamorous criticisms and suggestions from the sufferers may, possibly, serve to awaken remorse and arouse within "the powers that be" a desire for self-reform, and eventually lead to the adoption of at least some methods and principles that are comparatively modern in time and money saving.

I do not believe that our thousands of officers, enlisted men and civilian employés are more dishonest and untrustworthy than the millions of employés in general commercial business.

If commanding officers, quartermasters, and other accountable or issuing officers are worthy to hold their commissions, they certainly may be entrusted with the care of Government property under methods the same as, or similar to, those in common use in commercial business. I would recommend, therefore, more radical changes than those suggested by Lieut. Palmer.

What does the ordinary requisition of a company commander, for clothing, for instance, amount to ? The company commander signs it because the 1st sergeant tells him that the articles are needed, or because he has told the 1st sergeant to make requisition for them. The commander of the post signs as a matter of form. The chances are that the post quartermaster does not see it at all, or if he does, merely turns it over to the quartermaster sergeant. The quartermaster sergeant examines it, makes a memorandum of the articles, or of such of them as are on hand and issuable, and makes the issue accordingly. The requisition dwindles to a memorandum for the quartermaster sergeant of what articles the company commander applies for. Attention is invited here to the fact that this memorandum is not necessarily, and very frequently is not, that of the actual issue, and the corresponding invoice and receipt, and further attention is invited to the fact that this formal memorandum, if for a set of chevrons and stripes for a newly made corporal, for instance, or any two or three articles, requires as much paper and printing as if used for drawing the clothing for a quarterly issue to a company !

I would recommend that the use of formal requisitions at a post be discontinued and the adoption of the use of memorandum tablets, with carbon sheets inter-leaved, such as are commonly used in a commercial retail business, for memorandum of an order. Let the person applying for supplies make application direct to the one authorized to make the issue or sale. Let the order be taken down on one of the memorandum tablets, with ordinary lead pencil, two copies being made (more can be made if desired), one copy to be sent with supplies to person to whom they are issued or sold, the other copy to be retained, for use in compiling formal invoice, bill or statement, and for office record of the issue or sale. Simple marks, the use of initials, etc., may be added for verification, to trace responsibility for error, etc. Let the formal invoice follow, prepared from the memorandum. Where daily, or frequent, sales or

issues are being made, to an individual or organization, keep an open account, making formal invoice at regular periods, as at the end of the month, or when the account is presumably closed. One copy only of the invoice to be made on form printed with copyable ink, press book copy to be made in office of invoicing officer; this to be the office record (retained copy). A corresponding receipt to be given by the receiving officer, copied in like manner in press copy book in his office. For field use, or where press book copying is not practicable, tablets of invoice and receipt forms inter-leaved with carbon sheets, can be used. All office (retained) copies also of abstracts and returns to be made in press copying book in like manner, having been prepared on forms printed with copyable ink, and made of such size and in such manner as to admit of being copied in a book prepared for the purpose. These copies to take the place of the usual "retained" papers, and to remain as office records. Each quarter's accounts or papers being grouped together in the book would be in the best possible form for reference and preservation. If it is desired to have the records more complete by having a retained copy of invoice in office of receiving officer, and of receipt in office of invoicing officer, second copies may easily be made if it is required that the originals be made with good copying ink.

I would retain the same system of abstracts and returns as are now used. Abstracts are a convenient means of condensation, and the information to be obtained from them is in convenient form for reference, which is often useful or necessary. The condensed data on a return is in convenient form for facilitating examination of accounts, and in such form is convenient for reference, which is frequently necessary in the compiling office.

It scarcely seems necessary to say anything in regard to the uselessness of ordinary post requisitions going through the office of the post commander. It is well known that generally this is merely a matter of form, it being left to the issuing officer to decide whether stores can be spared. Allowances are fixed by regulations, and the issuing officer is really the one upon whom it devolves to see that allowances are not exceeded. If it is found necessary to reduce allowances or to discontinue issues or sales arrangement, is made through report of the accountable or issuing officer and instructions given him accordingly.

I believe it would be better to make a separate return for clothing. It is generally stored separate from other property and it would be easier to keep it on separate return than to have items of clothing scattered through the headings, alphabetically, on the ordinary property return, but all equipage could be carried on the usual property return, often to great advantage.

For Money Accounts I would recommend the adoption of similar methods.

I would recommend that the printed form of purchase voucher be abolished. Have the merchant's invoice, or the bill for services of the person hired, rendered in duplicate, and receipted in duplicate, when the account is paid. A receipt which is good legally should be good enough for the Government. It is not always easy, or even possible, to collect money due from the Government on a just account,—there is little danger of any one obtaining payment a second time, after giving a legal receipt. The certificates on a voucher are worthless. A man who will steal will certainly not hesitate to sign a false certificate. Persons conspiring to defraud the Government will not hesitate to sign the certificates on the printed forms of voucher, and they can accomplish fraud quite as readily, if not more so, than if customary business methods were employed. This will be better understood by those who have had opportunity to observe how recklessly persons sign Government vouchers in blank.

Remembering that forms are printed with copyable ink,—let one copy of Abstract of Purchases be made and copied in press copy book. Forward with this abstract one

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copy of purchase vouchers, the other being retained with office records. Prepare bills of articles sold, from memorandum slips retained for the purpose, as indicated under head for changes in methods in property papers; single copy if the present form of Abstract of Sales is continued. But the abstract might be made an abstract simply, the required certificate of the purchasing officer being printed or stamped on the form for bill, in which case the bills should be made in duplicate, carbon sheet being used, duplicate copy being given to purchaser, when received, and original filed with corresponding abstract. The Account Current and other abstracts, if any, to be modified to permit copying in press book, single copies being made, as with other papers.

By having the memorandum tablets in use everywhere it would be much easier to keep accurate account of all issues and expenditures, a memorandum being made for every issue to shop, mechanic, corral, etc., and these abstracted at convenient periods.

The above suggestions have been made without opportunity to refer to forms now in use, or to a set of papers. It is believed, however, that sufficient has been indicated to show that by the adoption of these or similar methods in the transaction of the business of the Quartermaster's Department, at a post, there might be a great saving of expense, time and labor, without increase of opportunities for loss and waste of public property, rather decreasing these opportunities, and at the same time simplifying the papers so that it would seem that any one with sufficient sense to have charge of property would be able to make up a set of quarterly papers.

First Lieut. J. B. McDonald, Regimental Quartermaster, 10th
U. S. Cavalry.

Lieut. Palmer's article is to the point and gives a fair, partial substitute for the absurd method now in use. That forty thousand papers should be required, where three thousand, with equal safety and more economy to the Government will suffice, is one of the unfathomable mysteries of the department. If the property paper work were simplified as set forth by Lieut. Palmer, and the money and clothing papers remodelled as much, it would give a post quartermaster time to devote his attention to the more important duties of securing supplies, superintending issues, repairs, building, etc., thereby frequently saving the Government materially by preventing irresponsible subordinates from robbing it of its regular supplies, etc., by collusion with dishonest contractors, as shown by Lieut. Palmer, in relieving the acting assistant quartermasters who were short on these articles.

I have relieved several similarly situated, correcting their accountability both with and without the aid of boards of survey.

A post quartermaster with so much clerical work to do and who personally attends to, or even carefully supervises it, *may* keep his papers straight, thereby saving work for the clerks in headquarters' offices but does it at great expense to the Government from the loss of his personal supervision of out-door work.

The work in the offices of the officers of the Quartermaster's Department can only be done by experienced clerks under the present laborious system; it is to the interest of these latter to have this work to do; a simplification of the work as advocated would leave no need for half of their services, reduce the importance of the department that much, throw many old friends out of employment and otherwise so smooth over the ruts on this "Babel's Tower of paper work" that its builders and followers would slip off into the plane of modern business methods wondering "where they were at":—Hence no change.

It is two to one that Lieut. Palmer's excellent practical suggestions will not be used though they are as superior to the present method as forty to three.

There is certainly plenty of ability among the officers of the Quartermaster's Department to devise a system of paper work embracing less than one-fifth of those now in use and it is strange that some of them do not set about it; and the others demonstrate to Congress the necessity of so working the appropriation bills as to allow the money to be expended according to their system, thus saving at least the double pay of mileage to land-grant railroads for officers travelling under orders without troops and many similar useless expenditures.

V.

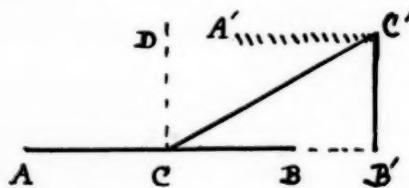
"Right (or Left) Turn" of the Infantry Drill Regulations."

First Lieut. Henry H. Ludlow, 3d U. S. Artillery.

CAPT. KINGMAN'S article interested me very much, not only because of its general interest when the drill regulations are undergoing revision, but also because some of his points had come to my notice during the summer of 1894 at Fort McPherson, Ga., in an informal discussion with Lieut. E. W. Hubbard, 3d Artillery, as to the paths of the files in this movement.

Capt. Kingman clearly demonstrates the impracticability of executing this movement according to the wording of the drill regulations, with the standard short step of 15 inches in quick time, or 18 inches in double time. The difficulty lies in the degree of obliquity being so great that the adjacent files interfere with each other. The "Turn and advance" with the short step of 15 inches requires the excessive obliquity of $65^{\circ} 42'$ as shown by Capt. Kingman, while the "Turn and halt," which corresponds to reducing the length of the short step to zero, gives the well-known obliquity of 45° . Any intermediate degree of obliquity may be produced by a short step of suitable length less than 15 inches for quick time. In order to make the entire movement practicable it is only necessary to shorten the length of this step sufficiently to bring the degree of obliquity within practical limits. This remedy retains the natural advantage of the turn over the wheel, namely, that of reducing to a minimum the length of path of the file on the marching flank. It is believed to be worthy of careful consideration before abandoning the turn as suggested by Capt. Kingman.

It is proposed to discuss briefly the length of short step suited to this movement in single rank, disregarding the rear rank for the present.



Denote by m the ratio of the length of the short step to that of the full step, 30 m and 36 m being the lengths of short step corresponding to quick time and double time full steps of 30 and 36 inches respectively. Let AB represent the front of any subdivision at the instant that the turn commences; B the place of the pivot file who faces to the right; C that of any other file. Represent by B' the new place of the pivot file at the instant that C reaches the new line at C'. The path of C will be the straight

line CC' . At C draw CD perpendicular to AB and denote by ϕ the angle $C'CD$ through which the file at C faces to begin his oblique. Let $CB=y$ and $CC'=z$. Then $B'C=CB=y$. And since BB' contains the same number of short steps that CC' contains full steps, $\frac{BB'}{CC'}=m$. Hence $CB'=y+mz$.

The right triangle $CB'C$ gives by Geometry,

$$CB' = \sqrt{\frac{z^2}{CC'} - \frac{y^2}{B'C'}}$$

or

$$y+mz = \sqrt{\frac{z^2}{z^2} - \frac{y^2}{y^2}}$$

and solving with reference to m we have

$$m = -\frac{y}{z} + \sqrt{1 - \frac{y^2}{z^2}}.$$

In the same right triangle, by Trigonometry, we have

$$\frac{y}{z} = \sin B'CC' = \cos \phi.$$

Hence $m = -\cos \phi + \sqrt{1 - \cos^2 \phi} = \sin \phi - \cos \phi \dots \dots \dots (1)$

since

$$\sqrt{1 - \cos^2 \phi} = \sin \phi.$$

Capt. Kingman has cleverly deduced $\phi = 64^\circ 38'$ as the greatest possible value of ϕ . This gives in (1)

$$m = \sin 64^\circ 38' - \cos 64^\circ 38' = 0.9036 - 0.4284 = 0.4752,$$

whence we have $30 m = 14.256$ inches and $36 m = 17.107$ inches, which are the greatest possible values of the short step for quick and double time respectively with which this movement can be properly executed when the marching is perfectly regular.

Capt. Kingman has also deduced $\phi = 60^\circ$ as the maximum practical value allowing for reasonable irregularity of marching. This gives

$$m = \sin 60^\circ - \cos 60^\circ = 0.866 - 0.500 = 0.366$$

whence $30 m = 10.98$ inches, and $36 m = 13.176$ inches, which are approximate practical maxima of the short step in quick and double time respectively for this movement.

From equation (1) by transposing we have

$$m + \cos \phi = \sqrt{1 - \cos^2 \phi}$$

squaring each member of this equation

$$m^2 + 2m \cos \phi + \cos^2 \phi = 1 - \cos^2 \phi$$

transposing, simplifying and dividing each member by two

$$\cos^2 \phi + m \cos \phi = \frac{1-m^2}{2}$$

Therefore

$$\cos \phi = \frac{-m \pm \sqrt{1-m^2+m^2}}{2} = \frac{-m \pm \sqrt{2m^2}}{2} = \frac{-m \pm m\sqrt{2}}{2}$$

The lower sign is rejected as $\phi < 90^\circ$ requires $\cos \phi$ to be positive, and simplifying gives

$$\cos \phi = \frac{m}{2} \pm \frac{\sqrt{2-m^2}}{2} \dots \dots \dots (2)$$

in which $m < 1$, since the short step is always less than the full step. Since ϕ is the

same for every value of y , *i.e.*, for every file of the subdivision, all the files oblique on parallel straight lines.

The following results computed from equation (2) show the effect of changing the short step in this movement.

Short step, quick time..	9 in.	10 in.	11 in.	12 in.	13 in.	14 in.	15 in.
Value of m	0.300	0.333	0.367	0.400	0.433	0.467	0.50
Short step, double time.	10.8 in.	12.0 in.	13.2 in.	14.4 in.	15.0 in.	16.8 in.	18.0 in.
Value of.....	57° 15'	58° 38'	60° 02'	61° 26'	62° 51'	64° 16'	65° 42'

From the foregoing we see that a short step of 9, 10 or 11 inches at quick time will permit the easy execution of this movement; that 12, 13 or 14 inches requires too much attention to the regularity of planting the feet; and that 15 inches prescribed in the drill book makes the movement impossible of execution as prescribed.

With a suitable short step—say 10 inches for quick time or 12 inches for double time—the rear rank men may “conform to the movements of their file leaders” by following at facing distance when moving in quick time, or at 36 inches when moving in double time.

Reviews and Exchanges.

The Story of the Civil War.*

In this book the author starts out with the unique purpose of giving us a history of the rebellion from the standpoints of both North and South. This, however, is applicable to the first chapters only, and here only as an explanation of the southern views of states-rights. The succeeding chapters on the operations of 1861-2 are confined to the operations of the union armies.

A fair view is given of the conception of the South on the subject of national allegiance. The South did not consider secession to be rebellion for the correction of grievances, but as a *defense* of their several states against *aggression*. Hence, the union advance they held to be a war of attempted conquest, which it was their patriotic duty to resist to the last. We judge that the feelings of the South were better understood north than were the conceptions of the North, as to the pact, understood south. This difference was apparent all thro' the war in the difference of temper exhibited by the contestants. The southerner was fiercely indignant at the aggression—the northman was carrying out a painful duty to resist denationalization on his inheritance. The arguments against the doctrine of states-rights in Notes to chap. i., are good if not all new. On page 12 he declares slavery to have been the cause of secession, but wisely and cautiously adds "directly or indirectly."

While the North was in doubt as to the feeling of its people as a whole on the various questions involved in secession and unity, the author sums up the matter very gracefully in a paragraph comprehensive of the facts—"meantime no one knew how the masses of the northern people viewed the whole question. The event was to show that the masses knew very little and cared less about the theory of the matter. But that the sentiment of devotion to the United States as their country, and the belief that their country comprehended within its borders all the seceding states, were unexpectedly and overwhelmingly strong."

The second chapter argues on the legal aspects involved in taking of the sea-coast forts, magazines, light-houses, etc., of the coasts.

A great truth is involved in one of the author's remarks on South Carolina secession. "The rupture of ties that had existed for upwards of eighty years could never have been effected if a strong feeling of animosity toward the northern people had not existed." It is easier to tell how this feeling grew than to tell when it was born. Sectional feeling between the colonies was very marked before the Revolutionary War. Slavery couldn't have been the basis of this. A point that the author seems to omit is the change of conception as to the union that worked both in the North and in the South. No people were more cautious than those of the South in accepting the constitution. They knew all that it involved. No people were more bitter against the Hartford Convention. But, as the interests of the two sections began to differentiate,—the slavery of the South and its flat coasts binding it to purely agricultural life,—

* *The Story of the Civil War.* By John Codman Ropes. G. P. Putnam's Sons. The Knickerbocker Press, 1894.

leaving to the North progress in manufactures, commerce, and the arts,—southern leaders began to educate the people in the new states-rights view of the constitution, preparing then for the “rupture” they saw would be inevitable. On the other hand the prosperity of the North under the working of the constitution, yearly made clearer to the minds of men, the unity of our country as framed in the *Articles of Association* of 1774.

The third chapter is devoted to the political imbroglio of the Ft. Sumter question. Mr. Buchanan is zealously defended from the charge of want of faith with Messrs. Miles and Keitt, the South Carolina commissioners: the author is very respectful to the policy of the president at the incubation of the rebellion. In his Note 4, the criticism on Major Anderson is partly right and partly wrong. It is certainly not only the right but the duty of a military commander to learn and to express to his government the effects likely to occur upon the pursuance of any given course of policy. Two things are certain: 1. That Major Anderson was never reproved for it by either the civil or military administration. The writer is the first to discover it. 2. Anderson was the best source of national authority present, where proper judgment could be formed. He, there, was *the United States*. So far as he allowed his acts or his opinions of the actual status to be influenced by what he thought should be the treatment of secession, he could not have been “wronger.” We have ever thought he was not a proper selection for the place, but we may be much mistaken. Had a representative unionist been selected he might have precipitated hostilities long before the public mind was universally prepared for the full assertion of rights of sovereignty, and Buchanan might not have been equal to the task of meeting what the act would have involved. We suppose it must have all been for the best; directed by Providence rather than by Anderson, Ropes or Us. The inertia of public feeling was moved between November and the fall of Sumter by daily acts of southern aggression up to the point of inflammation, which might not have been effected by an attack in November precipitated by the imprudent action of a hotheaded and indignant unionist. Under any view the author’s condemnation of Anderson is too unqualified. He ignores that the government knew just what Anderson had need of, if *it* had a policy to arouse the need. It knew every gun, every pound of powder, every match, every pound of pork and hard bread he had on hand. It knew all his means of defense and was kept advised of the acts of his enemies—to ask him what he needed for defense against an immediate or meditated attack and await his estimates founded on a profetic basis of what might be effected upon Carolinians by the vacillating policy of Buchanan—would have been simply a joke. It could only have been intended to teach him that temporizing was to be the policy of the government. After a thorough condemnation we find in Notes on chapter third: “Anderson, it must be remembered, however, and his engineer officer, Foster, sent very full and accurate reports to the War Office.” Does the author stultify himself?

It is scarcely fair to assume (page 70) that “Mr. Lincoln would never have taken the risk involved in beginning an aggressive war against the South, had Sumter fallen before the 4th March.” On the contrary the country was fully awake to its rights by that time and was standing appalled at Buchanan’s weakness and praying momentarily for Lincoln’s accession and a policy of back-bone.

We think the renewed attack on Anderson on page 77 is childish and contains its own refutation.

“The Secretary of War, it will be remembered, [there is no danger of our forgetting it, he keeps repeating it often] had left it to Maj. Anderson to decide when the proper time should arrive for the government to send supplies and reinforcements to his beleaguered command, and Anderson, as we have seen, feeling sure that any attempt of the kind would induce the enemy to attack him and thus bring on the civil war which he so much deprecated, had never requested either rein-

forcement or supplies. But he had on the last day of February asked the opinion of his officers on the possibility of reinforcing the post, and on the number of the troops that would be required; and he had on the same day forwarded their replies together with a statement of his own to the Secretary of War. His own estimate was that 20,000 men would be required to the task. In this opinion several of his officers concurred; the remainder put the number at a much lower figure."

And for the above gross neglect and fear of precipitating attack the administration promoted him to a generalcy and assigned him to the command of the militia of his native state. It has required a number of years to discover Anderson's turpitude. The author, if at all logical, must wish us to believe that Anderson wished 20,000 men to be thrown into Ft. Sumter for its defense. A. meant that Morris Island, Cumming's Point, and perhaps Charleston and Forts Moultrie and Pickens would have to be taken. The promptitude! of the administration in complying with his estimates must have convinced him of the wisdom of his past policy. Up to the time the *Confederate States* was investing Anderson, he had plenty of means against a *coup de main*. Why should he ask more? When the investment commenced it was not such that an island fort could subdue by *sally*. Daily the government was informed of the progress of the investment, and quietly waited for its near completion (according to the text) before consulting the chiefs of the army and of the engineers.

Anderson of his own initiative abandoned Moultrie on true military policy to avoid its and his loss by assault. His little force was unassailable by such or by regular approaches in Sumter. Against operations on Morris Island it was impossible to defend himself. He didn't surrender for want of food or of men. If he did, why hadn't the *Star of the West*, sent for that purpose, supplied him? The time of dispatching her, according to the text itself, was regulated by political and tactical discussions in Washington—Anderson had nothing to do with it.

The fifth chapter ends with a legal discussion as to on whom rests the responsibility of the initiation of hostilities—the supplying of the garrison or the firing on Sumter. If the subject is worth discussing the reader will find it ably and learnedly analysed. For our part we look upon the consideration of the propriety of letting the fort's boats land at Charleston for common marketing purposes in the early December, as the opening of hostilities. Every spade full of dirt dug as a preparation to attack the national flag was a treason.

As to the impolicy of the South in resisting the victualling the garrison (by the *Star of the West*), the reasoning is exceedingly acute, and shows the author's deep knowledge of men in political communities. We would give his conclusions on pp. 86-7, but as they are worth the price of the book we advise the reader to seek them in the legitimate way. The *Notes* to chap. v. are to again prove the unity of the nation.

Turning to chapter vi., we think the South did not "despise the forbearance of the North" so much as they misunderstood it. They didn't once think it forbearance. They didn't think that a "*trader*" would die to defend his property interest in dry-goods so readily as would a slaveowner his ownership in a negro.

A fresh idea worthy of consideration by those of Maryland, Kentucky, and Missouri who fought in the confederate ranks is brought out on pp. 94-5.

"The conduct of those, who, being citizens of states which remained in the Union, fought on the side of the Confederacy, while natural enough under the circumstances, is certainly not easy to justify. Perhaps the case of the French *Emigrés* of 1792 comes nearer to it than any other in history. It cannot be defended politically from any standpoint. No citizen can legitimately fight against his country because he thinks his country ought to have joined with the powers which are opposing it and its allies."

This would condemn Breckenridge, Buckner, Hood, etc., as well as the northern "*doughfaces*" that marriage carried south, to the charge of treason even under a states-rights exegesis of the Constitution. Concise views are also given of the retention of these border states in the Union.

In the seventh chapter the marshaling of the "Opposing Parties" is ably done and they are skilfully and accurately measured. It is decidedly the best and fairest "sizing up" we have met. The contrast,—which we don't remember to have seen before noted—between the numbers of resignations of the army and of the navy, is dwelt on and a very reasonable cause for the relative fealty of the navy is given. The more frequently seeing the flag of our nation brought in contact with foreign flags taught them that our country was their nation and that a state had little representation there. It should have none; we are daubing our union-jack with little strings of tiny stars to the defacement of the flag. The "*New Constellation*" and its entire significance is being, and is wiped out by these strings. Why not return to the old Thirteen, grouped artistically according to original intent.

It is suggested that we lost Twiggs to the Union, possibly, and his command, surely so, thro' Buchanan's temporizing policy, and in the *Notes* on this chapter the officers of the seceding states who went south are defended against the charge of disloyalty, on their understanding of the pact between the States.

Chapter VIII. opens with an attack on Mr. Lincoln for his appointment of Butler, Banks, and Fremont to high office. The writer is "smart" in the selection of these names which subsequent events stamped as failures. But he should not forget that the great question then before the president was to popularize the war. Political sagacity was shown in the selection of these men. Butler represented the union democracy, Fremont the Missouri republicans, Banks was acceptable to the radical anti-slavery element of the East. All these men had shown great ability in their previous walks of life, and their military lives were not a continuous failure. If they were, there were also just as great failures among the "soldier" appointees. Tho' Butler never missed an opportunity to deprecate and insult the regular army, he always surrounded himself with its best procurable assistance. He did plenty of good service. Fremont had rendered brilliant service to the country, and had shown himself a magnificent handler of the difficult problems of the mountains and deserts. Everything was to be expected of him, and things might have turned out very differently had he been put at once in the field instead of being called on to administer the complexities of Missouri politics and finance.

In considering "*The Opposing Parties*," the advantage to the South in its views of a military are noted. Where the North held the military spirit in contempt, instance Charles Sumner, the South affected it.

"The northern people, whether in the east or west, were busily preoccupied, full of schemes for the development of the country and for the acquisition of private fortunes: happy and contented in their manifold industries they detested equally the wastefulness and the cruel sacrifices inseparable from fighting."

This is so, equally, to-day: they will neither spend time nor money for the protection of their seacoast property. A like neglect to brigade McDowell's militia is referable to the northern fear of strengthening a military oligarchy—it prevented a Chief of Artillery being appointed during the war—and it is one of the causes still at work to prevent such an office, while everybody admits that the artillery arm can make no progress without it. Petty jealousies also work to prevent it now and similar ones operated during the war. They kept back action by McClellan in forming his army corps, till Mr. Lincoln cut the Gordian knot. The South beat the North in everything in the way of organization, as the writer shows. In a better selection of officers of high rank, in a better appropriation of rank to command, and in grades, as generals, lieutenant generals, major and brigade generals. Northern niggardiness did not help the union cause.

Blair, Gant, and Lyon are accorded their due meed for preserving Missouri to the

Union. And here we may say that in a conversation with the late Col. Callender of the ordnance, he told us in St. Louis: "Lyon messed with me at the beginning of the break-out, and he stood head and shoulders above any man in the United States in his estimate of the extent, power, and cost of the rebellion."

The author points out the peculiarity of the two capitals' proximity and their being substantially on the frontiers of their respective territories. This relation framed the plans of warfare. The objects of each party was 1. To protect the capital of its own country. 2. To capture the enemy's capital. Lastly to defeat the opposing army.

An excellent and graphic description of the battle of Bull Run is given, accompanied by a fine map sufficiently specific for a general knowledge of the event. Upon the whole he is complimentary of McDowell.

In opening up the reorganization under McClellan he is quite laudatory of the general's antecedents.

We are shown what terrible results would have followed the invasion of the North at this time had Johnston, Beauregard, and Smith's advice been followed. Luckily Jeff. Davis' evil genius made him overcautious and an invasion of Maryland, Pennsylvania, and —— were avoided.

The proposition of McClellan to take and occupy all the Atlantic cities is rather held up to ridicule. McC. is condemned for allowing the enemy to establish himself on Munson's Hill and to close the Potomac at Cockpit Point. About the last of November McC. began to doubt his ability of a front attack on Manassas, and to seek the strategy of a Chesapeake flank, Fort Monroe or by the Rappahannock.

In continuation of "*Plans and Preparations*" the relative policies of Buell, as differing from McC. and Lincoln are discussed—Lincoln's sympathy for the unionists of E. Tenn. appears to have directed his policy, while McC. thought only of its occupation as a weakening of the enemy's resistance at Richmond. We agree with the author in considering Buell's as the true grand-strategy, but his constant marring of his superior's policy may be questioned as a matter of subordination. Still the delay was on the whole we think advantageous and possibly avoided an inestimable disaster.

The neglect of Mr. Lincoln to acknowledge the services of Thomas at Mill Springs is animadverted on. We doubt Mr. Lincoln's ever having made the remark, "He is a Virginian, let him wait." Mr. Lincoln's confidence in Thomas' *zealous* loyalty may have needed strengthening. He may have said "Let us wait." Even that, however, would have been bad policy. No good reason has been given for the neglect. It must have been a sore strain on that noble soul, "Pap Thomas." Had we been he, we should have asked Mr. Lincoln direct for his reasons and we believe they would have been given frankly. The author's surmise, that "nothing was to be gained by conferring any special mark of distinction" upon a man without political affiliations, does certainly not cover the case. At no time in the war would encouragement to a victorious commander, have better paid. The chapter tenth closes with a defense of Buell's Kentucky policy. He certainly was unfortunate in his relations with the administration. He, probably, had no superior as a captain and the country remains very much in his debt.

A defense of McClellan's dilatoriness in an advance on Manassas is defended in chapter eleven. He justifies McC. in his reticence on his plans and policy. As we understand the author, he had no confidence in his new army of 150,000, for an attack on the intrenched Confederates. He proposed to first discipline, drill, and inure them to the hardships of soldiering. And these doubts and purposes must be kept from the enemy, else this would have advantaged himself of it to release men from Johnston and Richmond to resist the union attacks on the seaboard and in Kentucky. McClellan did not confide his intentions even to the President. We are forced to ask "Then where

did he expect to get any moral support, or to get anybody to stand between him and a clamorous public." Surely such men as Lincoln and the Secretary of War could have comprehended his policy and could have done all the possible in his behalf; as it was his reticence only added these officials to the numbers of his executors. Or,—was this reticence an afterthought of McClellan's? If he could not have persuaded the president and secretary to his policy, he would have been cleared of all responsibility for failure.

The author cannot be said to unduly favor McClellan, for he points out freely his faults and failures. We believe that the keeping the army before Washington was judicious and was most exhausting of the enemy's resources. We think much of the failure of the spring campaign was due to its prematurity. We are told that McC. should have engaged in minor operations, to the hardening of his troops and to the diversion of the public: Such as taking Norfolk and clearing the Potomac. Had it been impracticable to hold Norfolk, Gosport Navy Yard and the Merrimac could have been destroyed.

We think the author wrong in holding Lincoln unjustified in feeling despondent over the situation in January; that is, during McClellan's sickness. The alleged fine condition of the armies of the east and west, known to him and them, did not enable " McDowell and Franklin " to cheer him up. He, as everybody, was waiting to see something done. There was not even a definite purpose yet formed to be worked up to. His great body of men without its leader was the greater weight on him. Everything was being done to sap his confidence in McClellan and he didn't know where to turn for a substitute; and here he appeared to halt at the immense responsibility of making such a choice—and then he was so loyal to his first convictions! To him it would have been infamous to set aside a young idol till it had made a practical failure. In addition, the writer forgets that Mr. Lincoln was at this time oppress with party complications and with the bad condition of government finance. Mr. Lincoln (p.224) is denied all the qualities of buoyant purpose which the world has accorded him, and all his antecedents in experience are depreciated. Yet inferentially, all these are accorded to McClellan. Also we are taught that the only use for Stanton was to give backbone to Lincoln and Seward. His administrative ability was of no use, he was a mere marplot!!!

Again we are forced to differ with the writer in his criticism of Lincoln's "*President's General War Order No. 1.*" The president felt that the country demanded it. The author's subsequent remarks show that Mr. Lincoln considered it but a stimulus to what *tout le monde* considered lagging generals trying to find a strategy that would succeed without danger. The very thing that showed Lincoln's nobility and amenability to reason, after every apparent self-involvement, was that three days after the order, he offers to yield his plans upon satisfactory answers to the questions of success or retrievalment of failure. McClellan was silent on all except the practicability of the Peninsular roads and in this we know him to have been mistaken. It is known what an immense problem McClellan and Lincoln had to solve. We cannot imagine that McClellan " was less impressed with the necessity for the safety of the capital " than Mr. Lincoln.

McClellan's suggestion of the administration not wanting him to succeed in the Peninsular campaign shows a high self-estimate. That is, 'twould be better for an army of 150,000 to fail, with the loss of hundreds of millions of treasure, and of possibly the whole cause, than that the general, McClellan, should succeed! This terrible sacrifice was the only way of getting him out of the way!!!

McClellan's proposed and favorite Urbana movement is declared by Barnard to have been impracticable. Between Urbana and the enemy lay the Dragon Swamp,

three large rivers, and unpassable mud roads. That neither the Ft. Monroe nor Yorktown bases were forced upon him is clear from Secretary Stanton's orders of March 13 (*Army of the Potomac*, Report of McC. p. 60) which gave him a choice of base "at Fort Monroe or anywhere else between here and there." McClellan's "*Own Story*," page 227, is evidently an afterthought.

On page 242 the author condemns McClellan for precisely that adherence to purpose, regardless of modifying circumstances which he condemns Lincoln for not possessing, p. 236.

He scores McC. for leaving Washington unprotected regardless of all orders and opinions. Also Mr. L. for sending away Blenker's division. If it was thro' "pressure" he should have resisted it.

The last of the book gives the author's unqualified disapproval of McClellan's plans. There is doubt in expecting great results from an attack on Manassas. Though Johnston's force was comparatively small it was well intrenched. The movement might have brought forward the Confederate line of defense from Richmond, but again Johnston might have retired behind the Rapidan, as he did later without attack. An effort to turn Johnston's right flank could have been met by a forward movement from Richmond; would have been, for information of no important movement could at that time have been kept from the enemy.

It is pointed out that had the Southern transportation and roads permitted it, Johnston would have made a counter outflanking attack on Maryland and Pennsylvania during McClellan's Fort Monroe movement.

The book is beautifully written and printed, clear in thought, and almost faultless in logic, *from our present standpoint of knowledge*. In the might-have-beens suggested we only wonder why they were not. If no very new matter is presented to the reader, at least a condensed dramatic picture of the times and events is given, from the pen of a fearless writer, master of his subject. His friendliness to the professional soldier is very marked, but we fear that in some places it blinds him to the just claims of the eminent citizens to whom high enterprises were successfully confided.

The maps are excellent and well illustrate the text. It is one of the most readable of books and never tires one.

JOHN HAMILTON.

Organization and Tactics.*

A new volume upon "Organization and Tactics," by Capt Arthur L. Wagner, 6th Regiment of Infantry, United States Army (B. Westermann and Co., New York, London, Leipzig and Paris), has its chief claim upon American students, but will be read with much profit in this country. It will not, indeed, displace Hamley and other well-known writers, but it puts some matters in a fresh and interesting light, and is an instructive review of its subject. The organization which Capt. Wagner has in view is that of the three arms for fighting, and his tactics are chiefly fighting tactics. With manoeuvre tactics and the work upon the lines of communication he deals in a sketchy fashion. The tactical organization he writes of is that of the United States army, and he has some suggestions to make. For example, he disapproves of the so-called artillery "reserve," which in the army of the States, is regarded as that force by means of which the commander can bring to bear a preponderating force of artillery upon any selected point without weakening the other organizations. Having cleared his ground, Capt. Wagner gives a deeply interesting historical sketch of modern infantry, and proceeds to dis-

* *Organization and Tactics*. By Capt. Arthur L. Wagner, 6th Regiment of Infantry, United States Army. B. Westermann & Co., New York, London, Leipzig and Paris.

cuss the work of infantry in attack and defense. "This is the method pursued in regard to the three arms. The infantry attack described is that of the American drill regulations, but in an appendix are collected some particulars of the new French and German systems of attack. We are disposed to say that Capt. Wagner does not attach sufficient importance to the human element, which is, after all, the determining factor. He recognizes, indeed, the exceeding difficulty of securing effective fire discipline, but we wish he had read what Lieut. Stewart Murray has written upon this question. It is true that no academic teacher of fighting can evoke the moral qualities, and perhaps all that Capt. Wagner could say, in regard to cover, was to tell his readers that men "should be taught to leave it at the word of command." So convinced is he of the value of cavalry that he echoes Gen. Kilpatrick's apothegm that it "can fight anywhere except at sea." Believing, however, that well armed and unshaken infantry cannot be broken by a cavalry charge, he still sees a host of occasions which will permit the use of cavalry upon the battle-field. Shock-action he fully recognizes as the main power of cavalry, but he devotes some attention to mounted fire, and, considering cavalry to be "essentially a dependent arm" unless he can deliver effective dismounted fire, he expatiates at some length upon that point. The discussion upon the employment of artillery is good and full of instruction, though not all the conclusions may be accepted. We do not think many will agree that machine guns "should be a part of the general artillery command," for machine guns are not artillery. Capt. Wagner's book closes with chapters upon the three arms combined, and upon convoys. We have said enough to show that it is devoted chiefly to the tactics of the battle-field. Upon all that concerns troops in action, the author has indeed brought together a mass of valuable information which he has marshalled with skill, and we warmly commend his volume as full of instruction and suggestion for students. One of its most valuable features is that it reflects the collected tactical experience of many officers who fought through the war of secession.—*Army and Navy Gazette.*

Announcement.

AT a general meeting of the Military Service Institution, held on Friday, May 10, 1895, at Governor's Island, N. Y., pursuant to notification duly given in previous numbers of the JOURNAL and in circular letter dated March 1, 1895, the question of amending Section 5, Article V. and Article VII. of the Constitution of the Military Service Institution was put to vote; and as more than the required two-thirds of those voting, voted in the affirmative, the amendments were declared carried.

Historical Sketches of the Army.

THE following named officers have prepared the Historical Sketches of their Corps or Regiments published in this JOURNAL.

<i>Adjt. General's Dept.</i>	GEN. J. B. FRY.
<i>Insp. General's Dept.</i>	MAJOR J. P. SANGER.
<i>Judge Adv. General's Dept.</i> COL. J. W. CLOUS.	
<i>Quartermaster's Dept.</i>	CAPT. O. F. LONG.
<i>Subsistence Dept.</i>	GEN. J. W. BARRIGER.
<i>Medical Department</i>	MAJOR CHAS. SMART.
<i>Pay Department</i>	COL. A. B. CAREY.
<i>Corps of Engineers</i>	GEN. H. L. ABBOT.
<i>Ordnance Department</i>	MAJOR C. E. DUTTON.
<i>Signal Corps</i>	CAPT. WM. A. GLASSFORD.
<i>1st Cavalry</i>	CAPT. R. P. P. WAINWRIGHT.
<i>2d Cavalry</i>	MAJOR A. E. BATES and CAPT. E. J. McCLERNAND.
<i>3d Cavalry</i>	CAPT. CHARLES MORTON.
<i>4th Cavalry</i>	GEN. T. F. RODENBOUGH.
<i>5th Cavalry</i>	CAPT. EBEN SWIFT.
<i>6th Cavalry</i>	CAPT. WM. H. CARTER.
<i>7th Cavalry</i>	MAJOR E. A. GARLINGTON.
<i>8th Cavalry</i>	CAPT. C. M. O'CONNOR.
<i>9th Cavalry</i>	LIEUT. GROTE HUTCHESON.
<i>10th Cavalry</i>	CAPT. JOHN BIGELOW, JR.
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<i>5th Artillery</i>	LIEUT. J. C. BUSH.
<i>1st Infantry</i>	MIL. SER. INSTITUTION.
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<i>3d Infantry</i>	LIEUT. J. H. MCRAE.
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Prize Essay—1895.

I.—The following Resolution of Council is published for the information of all concerned :

Resolved, That a Prize of a Gold Medal of suitable value, together with a Certificate of Life Membership, be offered annually by THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES for the best essay on a military topic of current interest ; the subject to be selected by the Executive Council and the Prize awarded under the following conditions :

1. Competition to be open to all persons eligible to membership.
2. Each competitor shall send three copies of his Essay in a sealed envelope to the Secretary *on or before September 1, 1895*. The Essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the Essay, followed by a figure corresponding with the number of pages of MS.; a sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address, should accompany the Essay. This envelope to be opened in the presence of the Council after the decision of the Board of Award has been received.

3. The prize shall be awarded upon the recommendation of a Board consisting of three suitable persons chosen by the Executive Council, who will be requested to designate the *Essay deemed worthy of the prize*; and also in their order of merit those deserving of honorable mention.

In determining the essay worthy of the prize, the Board will be requested to consider its professional excellence, usefulness and valuable originality, as of the first importance, and its literary merit as of the second importance. Should members of the Board determine that no essay is worthy of the prize, they may designate one or more essays simply as of honorable mention; in either case, they will be requested to designate one essay as first honorable mention. Should the Board deem proper, it may recommend neither prize nor honorable mention. Should it be so desired, the recommendation of individual members will be considered as confidential by the Council.

4. The successful Essay shall be published in the Journal of the Institution, and the Essays deemed worthy of honorable mention shall be read before the Institution, or published, at the discretion of the Council.

5. Essays must not exceed twenty thousand words, or fifty pages of the size and style of the JOURNAL (exclusive of tables).

II.—The Subject selected by the Council at a meeting held Nov. 9, 1894, for the Prize Essay of 1895, is

"THE ART OF SUPPLYING ARMIES IN THE FIELD AS EXEMPLIFIED DURING THE CIVIL WAR."

III.—The gentlemen chosen by the Council to constitute the Board of Awards for the year 1895 are :

GENERAL S. B. HOLABIRD, U. S. Army.

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GENERAL J. W. BARRIGER, U. S. Army.

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Secretary

GOVERNOR'S ISLAND,

March, 1895.

THE FOURTH REGIMENT OF CAVALRY.*

IN the annual report of the Secretary of War (the Hon. Jefferson Davis), for the year 1855, it was stated that "The four additional regiments authorized by the act of March 3, 1855, have been recruited and organized. Seven companies of the First Cavalry have recently returned from an expedition into the Sioux country and the regiment will winter at Fort Leavenworth, where it will be in position for ulterior operations in the spring."

When the two regiments of cavalry were authorized to be formed in 1855 it was with the understanding that all the field-officers and one-half of the company officers should be taken from the army, while the other half of the company officers should be taken from civil life.

The military fitness of those selected for the First (now Fourth) Cavalry is indicated by the high commands to which many of them rose, as follows:

Colonel : Edwin V. Sumner (Major General U. S. V. commanding corps).

Lieut. Col. : Joseph E. Johnston (Quartermaster General U. S. A.; General C. S. A.).

Majors : William H. Emory (Major General U. S. V. commanding corps); John Sedgwick (Major General U. S. V. commanding corps).

Captains : Delos B. Sacket (Inspector General U. S. A.); Thomas J. Wood (Major General U. S. V.); George B. McClellan (Major General, commanding U. S. Army and Army of Potomac); Samuel D. Sturgis (Brigadier General U. S. V.); William D. de Saussure (Colonel C. S. A.); William S. Walker (Colonel C. S. A.); George T. Anderson (Brigadier General C. S. A.); Robert S. Garnett (Brigadier General C. S. . . , killed in action).

First Lieuts. : William N. R. Beale (Brigadier General C. S. A.); George H. Steuart (Brigadier General C. S. A.); James McIntosh (Brigadier General C. S. A., killed in action); Robert Ransom (Major General C. S. A.); Eugene A. Carr (Brigadier General U. S. A.); Alfred Iverson (Brigadier General C. S. A.); Frank Wheaton (Brigadier General U. S. A.).

Second Lieuts. : David S. Stanley (Major General U. S. V.; Brigadier General U. S. A.); James E. B. Stuart (Major General C. S. A., mortally wounded); Elmer Otis (Colonel U. S. A.); James B. McIntyre (Major and Brevet Colonel U. S. A.); Eugene W. Crittenden (Major U. S. A.); Albert B. Colburn (Lieut. Colonel Staff U. S. A.); Francis L. Vinton (Brigadier General U. S. V.); George D. Bayard (Brigadier General U. S. V., killed in action); L. L. Lomax (Major General C. S. A.); Joseph H. Taylor (Lieut. Colonel Staff U. S. A.).

"In August, 1855, the regiment which had been organized at Jefferson Barracks was ordered to Fort Leavenworth. About the middle of September it was engaged in an Indian expedition in which no fighting occurred, but which kept the troops in the field until the fourth of November.

* The writer is under obligations to Col. E. B. Beaumont, U. S. A., (retired) for valuable information.

During the following year the First Cavalry was engaged in the work of keeping the peace between the political factions in Kansas who were struggling with the delicate question of slavery.

The first important Indian affair in which the new regiment participated occurred on the North fork of the Solomon River, within the limits of what is now Norton County, Kansas. From a letter* written by one of its officers who was there wounded—afterward the famous cavalryman Major General J. E. B. Stuart—we quote as follows:

Camp on Solomon's Fork, July 30, 1857. Yesterday after seventeen days' march from Camp Buchanan, we overtook about three hundred Cheyenne warriors drawn up in line of battle, and marching boldly and steadily. We fronted into line as soon as possible (the six companies of cavalry) the infantry being too far behind to take any part in the action, also Bayard's battery, which the colonel stopped three or four miles back, as unable to keep up. It was my intention and I believe that of most of the company commanders, to give a carbine volley and then charge with drawn pistols, and use the sabre as a *dernier ressort*; but much to my surprise the colonel ordered "Draw sabres! Charge!" when the Indians were within gunshot. We set up a terrific yell, which scattered the Cheyennes in disorderly flight, and we kept up the charge in pursuit. I led off Co. G right after their main body; but very few of the company horses were fleet enough, after the march, beside my own brave Dan, to keep in reach of the Indians mounted on fresh ponies. My part of the chase led toward the right and front, and in that direction companies G, H and D, were, in a short time, mixed together in the pursuit, so that Stanley, McIntyre, McIntosh, Lomax and myself were, for the greater part of the time, near each other, and frequently side by side. As long as Dan held out I was foremost; but after a chase of five miles he failed, and I had to mount the horse of a private. When I overtook the rear of the enemy I found Lomax in imminent danger from an Indian, who was on foot and in the act of shooting him. I rushed to the rescue, and succeeded in wounding the Indian in his thigh. He fired at me in return with an Allen's revolver but missed. About this time I observed Stanley and McIntyre close by. The former said: "Wait! I'll fetch him." He dismounted to aim deliberately, but in dismounting accidentally discharged his last load. Upon him the Indian now advanced with his revolver pointed. I could not stand that; but drawing my sabre rushed upon the monster and inflicted a severe wound upon his head. At the same moment he fired his last barrel within a foot of me the ball taking effect in the centre of the breast, but, by the mercy of God, glancing to the left, lodging near my left nipple, but so far inside that it cannot be felt. I was able to dismount and lie down, before which the Indian, having discharged his last load, was dispatched by McIntyre and a man of Co. D.

From the fall of 1857 until the summer of 1860 six companies of the First Cavalry were stationed at Fort Riley under the command of Major John Sedgwick.

In 1861 the regiment, like all others of the army, changed to a certain extent the personnel of its officers. Some of its most experienced soldiers resigned but their places were taken by young and ardent supporters of the Union cause who, under the eyes of those officers who remained in the service of the Government, rapidly developed into efficient subalterns.

The operations of the regiment during the first year of the war were desultory in their character. On the 18th of March Lt. Col. Emory commanding was ordered to proceed to Fort Washita and establish his head-

* Campaigns of Stuart's Cavalry, H. B. McClellan, A. M., New York, 1885.

quarters. April 17 he was directed to proceed "with all the troops in the Indian country west of Arkansas to Fort Leavenworth" and reached there May 31. About the same time Captain Sturgis evacuated Fort Smith and marched to Washita.

Two companies were ordered (May 29) from Fort Wise to Fort Kearney to hold in check the Indians in that section and Lt. Col. Sedgwick was sent to Leavenworth. On the 22 June, Gen. McClellan, operating in West Virginia, applied for that part of the regiment stationed at Fort Leavenworth.

Capt. Colburn with Companies A and E participated in the battle of Bull Run, and was favorably mentioned by the division commander, Col. Heintzelman. Companies B, C, D and L were at the same time serving under Major Sturgis in Missouri. On the 27th of July a skirmish took place near Forsyth, Mo., in which Capt. Stanley, 1st Cavalry, with his troop, had the advance and lost two men wounded and four horses killed (including his own, shot under him). The same officer was conspicuous in an affair at Dug Springs, Mo., Aug. 2 when, as part of a detachment of troops under Gen. Lyon, his squadron made several charges cutting the enemy's line and completing his discomfiture. Capt. Stanley's loss was four killed and six wounded out of a total engaged of forty-two: Sergeants Coates and Sullivan were mentioned for gallantry.

In the annual report of the Secretary of War (Dec. 4, 1854), occurred this paragraph:

"The cavalry force of our Army being all required for active service of the same kind, there appears no propriety in making a permanent distinction in the designation and armament of the several regiments. It is therefore proposed to place all the regiments of cavalry on the same footing in these respects, and to leave it in the power of the Executive to arm and equip them in such manner as may be required by the nature of the service in which they may be employed."

It is worth noting that this recommendation of the subsequent President of the Southern Confederacy was not acted upon until in the early part of President Lincoln's administration when (Aug. 3, 1861), an order was issued renumbering the mounted force and naming the subject of this sketch the *Fourth Cavalry*.

At the historic affair of Springfield, Mo., known as Wilson's Creek (Aug. 10), where the lamented Lyon fell, the regiment was represented by Captain Carr's company and one company under Lieut. Canfield, 2d Drags.*—serving in different brigades. In the official reports Lieut. Canfield is honorably mentioned; the casualties consisted of one wounded and three missing in D, and four missing in I. The small regular cavalry force engaged shared in whatever of credit could be obtained from "the mixture of glory, disgrace and disaster," reported by Major Schofield of Gen. Lyon's Staff as a prominent feature of this engagement.

On the 19th Dec., 1861, a spirited skirmish, in which B, C, D, (being part of an expedition under Gen. Pope to cut Price's communications) behaved very gallantly, occurred on the Blackwater River, Mo. Gen. Pope reported that in attempting to carry a bridge held by a strong force of the enemy:

* Afterward Captain ad Cav. Killed at Beverly Ford, Va., June 9, 1863.

"The two companies of the 4th regular cavalry being in the advance under the command respectively of Lieuts. Amory and Gordon were designated for that service and were supported by the five companies of the First Iowa. Lieut. Gordon led the charge in person with the utmost gallantry and vigor, carried the bridge in fine style and immediately formed his company on the opposite side. He was promptly followed by the other companies. The force of the enemy posted at the bridge retreated precipitately over a narrow open space into the woods. The two companies formed in line at once, advanced upon the enemy and were received with a heavy volley of small arms. One man was killed and eight wounded by this discharge, with one exception all belonging to Co. D; Lieut. Gordon himself received several balls through his cap."^{*}

When McClellan in April, 1862, began his Peninsular Campaign, two companies (A and E) of the Fourth Cavalry (4 officers and 104 men) under Captain McIntyre constituted his personal escort; the remainder of the regiment being on duty in the West. On the 27th August, Gen. McClellan reported that he had loaned his "personal escort (a squadron 4th Cav.) to Burnside to scout down the Rappahannock." In October, 1862, this squadron joined the regimental headquarters in Tennessee.

In Nov. 1862, Cos. F and H were stationed at Fort Laramie, Neb.

At Pittsburg Landing (Shiloh) Tenn., April 6, 1862, Company I was present, losing one enlisted man and five horses killed and five men wounded; this company (together with B, C, D, G, K) was also present at Corinth, Miss., 9-14 May; a detachment under Lieut. Gordon took part in an affair near Farmington, Miss.; no casualties.

In the organization of the Army of the Mississippi, April 30, 1862, Capt. E. W. Crittenden commanded a part of the regiment, "unattached."

During the Stone River campaign (1862-63) the regiment commanded by Capt. Elmer Otis served under Gen. Stanley who said in his report of the operations near Murfreesborough that "The Fourth U. S. Cavalry behaved very handsomely." The casualties comprised three enlisted men killed and Capt. Eli Long and nine men wounded; twelve men missing. Capt. Otis in his official report † states that "from prisoners taken (of whom there were over one hundred) by the regiment I have learned that the 4th U. S. Cavalry charged at this time an entire brigade of cavalry and routed them to such an extent that they disappeared from the field altogether." Other details are given as follows:

"Of the officers engaged it is almost impossible to particularize, they all did so well. Capt. Eli Long led his company with the greatest gallantry and was wounded by a ball through his left arm. Lieuts. Mauck, Kelly, Lee, and Healy could not have done better. It was a matter of surprise to me, considering the ground passed over to find Dr. Comfort so soon on the field with his ambulance caring for the wounded; he was in time to capture a prisoner himself. First Sergt. Martin Murphy led Co. G and commanded it with great gallantry. He reports having counted eleven dead of the enemy on the ground over which his company charged. Sergt. Major John G. Webster behaved gallantly, taking one lieutenant mounted on a fine mare. First Sergt. James McAlpin led Co. K after Capt. Long was wounded. First Sergt. John D. Lan (B) captured a captain and received his sword. No one could have acted more bravely than First Sergt. Charles McMasters.[‡]

* See Lieut. Amory's Report, War Records VIII., 40.

† War Records XX., part I., 648.

‡ Afterward Lieut. ad U. S. Cavalry, killed at Front Royal, Va., in 1864.

First Sergt. Christian Haefling, in charge of courier line near headquarters, proceeded in the thickest of the fire and recovered the effects of Colonel Garesché on his body, killed in this day's fight. * *

" Private Snow (L) orderly to Gen. Rosecrans was ordered, Jan. 2, to pick up fifteen stragglers, take them to the front and turn them over to some commissioned officer. Failing to find an officer he put them into line and fought them himself, telling them the first one who attempted to run he would shoot. Private Snow reports they fought bravely."

At the battle of Franklin, April 10, 1863, the regiment under Capt. McIntyre greatly distinguished itself, charging and capturing a battery of six guns and some three hundred prisoners. A large force of the enemy subsequently attacked our troops and after an hour's fight McIntyre was obliged to abandon the guns, having spiked them and broken up the carriages. Gen. Stanley in his report of the battle said: " From the circumstances the Fourth Cavalry did the most gallant service. Two gallant officers, old soldiers, were dangerously wounded—Lieuts. Healy and Simon, the former it is feared mortally." Capt. McIntyre gives a full account* of this fight for which there is unfortunately not space here.

The regiment was also in action at Middleton, Tenn., 20 and 23 May, '63 (B, D, E, G, I, K, M); Shelbyville, Tenn., 27 and 30 June, '63 (B, C, D, G, I, L, M); Ringgold, Ga., 18 Sept., '63 (A, B, C, I, M); Chickamauga Creek, Ga., 18 and 25 Sept., '63 (B, C, D, E, F, G, I, L); Okalona, Miss., 22 Feb., '64 (A, B, F, G, H, I, K, L, M); Tallahatchie River, Tenn., 22 Feb., '64 (A, H, M); Dallas, Ga., 26 and 28 May, '64 (A, B, C, E, F, I, M) and Lovejoy's Station, Ga., 20 Aug., '64.

In the latter part of October, 1864, the 4th Cavalry was relieved from duty with a brigade and ordered to Cavalry Corps Headquarters. The regiment was very much reduced in strength, numbering about 175 men. It marched to Nashville and took part in that battle on the 14th and 15th of December and in the pursuit of Hood. On the 24th of December a portion of the regiment, led by the brave Lieut. Joseph Hedges, charged into a battery of three guns driving them off the field and finally capturing them after a pursuit of a mile.

The Corps Commander (Gen. Wilson) says of this incident:†

" Late in the evening, apparently exhausted with a rapid marching, the enemy took up a strong position in the open field about a mile north of the West Harpeth. It was then so dark from fog and approaching night that the men of Hatch's division who had become somewhat intermingled with the sullen and taciturn Confederate stragglers, began to doubt that the ranks which were now looming up in their front were really those of the enemy's rear-guard. The momentary hesitation caused by this doubt gave Forrest an opportunity to straighten his lines and to push his single remaining battery in position so as to sweep the turnpike. Hatch on the left and Knipe on the right were at once ordered to charge the enemy's flanks, while the Fourth Regular Cavalry, under Lieut. Hedges, was directed straight against his centre. Seeing what was about to burst upon him, the battery commander opened with canister at short range, but had hardly emptied his guns before the storm broke upon him. Forrest did his best to hold his ground, but it was impossible. Hedges rode headlong over the battery and captured a part of his guns. * * *

" Lieut. Hedges, outstripping his men, was captured three different times, but throw-

* War Records XXIII., part I, 231.

† " Battles and Leaders of the Civil War."

ing his hat away and raising the cry, ‘The Yankees are coming, run for your lives,’ succeeded in getting away.”

Gen. Wilson’s staff headed by Col. E. B. Beaumont charged with the Fourth Cavalry in this affair.

It participated in the campaign of Selma and in the march to Macon. At Selma (April 2, 1865) it was again distinguished by a mounted charge on the enemy’s earthworks. This was repulsed with loss, but a second charge, dismounted, resulted in carrying the works. “The enemy rallied behind a second line of works where they were charged by a small mounted battalion of the Fourth Cavalry. The charge was broken up by a railroad cut and some fences close to the works. The regiment lost many horses; a few men killed and some wounded. Lieut. Webster was shot in the arm and Lieut. O’Connell had his horse shot under him, and was supposed to be killed. This charge failed; but the same battalion dismounted and supported by the 17th Indiana and 3d Ohio and a section of the Chicago Board of Trade Battery charged again and the line was gallantly carried. As we approached the works we had the satisfaction of seeing the bulky form of O’Connell rise from behind his dead horse, where he had been lying to avoid the enemy’s fire. He was bruised but unwounded.”*

About the time of the capture of Selma, it lost a dashing young officer, Lieut. Elbridge G. Roys, who while in command of a party of scouts was surprised by Forrest’s body guard and he and several men were killed and many were wounded.

After the capture of Macon, Georgia, the regiment remained there until late in November when it was ordered to Texas where ten companies were concentrated at San Antonio and two companies were sent to the Rio Grande. In the fall of 1866 the companies occupied the posts of Verde, Fredericksburg and Macon. In 1867 old Fort Chadbourne was reoccupied by four companies of the 4th Cavalry. In May, 1873, it was concentrated at Forts Clark and Duncan and under Ranald S. Mackenzie made a march into Old Mexico, surprising a Kickapoo village 40 miles in the interior, near Rey Molino. This affair was the result of an arrangement, with the tacit approval of the authorities on both sides of the Rio Grande, to permit troops in hot pursuit of Indian marauders to follow them across the line. The troops engaged consisted of A, B, C, E, I, M, and a detachment of Seminole scouts under Lieut. Bullitt. The Rio Grande was forded at night and the Kickapoo camp was surprised soon after daylight: the camp was burned and 200 horses and forty squaws and children were captured—the heads of families being absent on a raid.

In August, 1874, eight companies of the Fourth Cavalry, commanded by Captains McLaughlin, Beaumont, Gunther, Boehm, Wirt, Heyl, left Fort McKavett and proceeded via Fort Concho, Texas, the North Concho River, to a point on the First Fork of the Brazos close to the Staked Plains. Here a supply camp was established on September 2 and left under the command of Col. Thomas Anderson while the cavalry and an escort of the 8th Infantry for the wagon train scouted the heads of the Brazos, Pecos and Red rivers. On the night of the 26th of September hostile Indians attacked the camp of the 2d battalion under Capt. Beaumont and was driven off

without loss to the command, and on the following day an attempt to bring them into action failed. Col. Mackenzie was present with the battalion, and directed operations.

On September 27 the command marched all night and at daybreak surprised several small camps of Ouajada Comanches in the Paladuro Cañon of the Red River, burning numerous teepees and capturing over 1600 head of horses and mules. About midnight during the march, a broad trail was struck which was followed until daylight, when it led into a steep cañon some six or seven hundred feet deep. It was necessary to dismount and lead the horses as it was impossible to ride. Half way down, a sleeping Indian was awakened by the noise of the command, and springing upon a pony gave a piercing yell of alarm which was echoed at the bottom of the narrow valley where the Indians could be seen rushing out of their lodges and trying to throw some of their effects on their ponies, but they were too late to save anything. The squaws and children rushed into the side ravines among the rocks and brushes while the companies led by Captains Beaumont and Boehm pushed rapidly up the cañon expecting to meet a heavy resistance every moment. The cañon was almost choked with horses and it was difficult to get ahead of them, but the two companies finally succeeded in forcing their way through the frightened herd and turned it back. Lieut. Dorst, who had command of the advance skirmishers, drove the Indians before him and kept the way clear for the two companies, and when ordered to return brought with him a hundred horses picked up in a side cañon. Gen. Mackenzie ordered the command twice to halt, but Capt. Beaumont, being in advance, sent word back that it was injudicious to halt when the enemy were in full flight and as many horses would be lost. The second order to halt was received when the bulk of the horses had been secured. Capt. Boehm made his way through the brush and foot hills with remarkable rapidity and had his company well in hand. The horses were slowly driven down the cañon, when the foe commenced firing from the south side of the cañon, but after wounding a couple of horses and a trumpeter of Capt. Gunther's troop were silenced by twenty men of A troop led by Lieut. Dorst, who with great fatigue climbed the almost perpendicular north face of the cañon and opened fire. The lodges were burned containing large supplies of dried buffalo meat, robes and kettles, and the horses and mules driven back up the trail of the plain. After a rest the whole command moved back to the wagon train where it arrived at midnight and, putting the animals into the corral formed by the wagons, took a well earned sleep. Next day some twelve hundred of the animals were shot as it was impossible to hold them together to drive two hundred miles to Fort Griffin, the nearest post. This band of Indians was on foot and rapidly travelled to Fort Sill, willing to sue for peace at any price. The command remained in the field until late in December, and during that period visited heretofore unknown districts of the Staked Plains, and upon one occasion surprised a camp of Indians, capturing a dozen squaws and children and about one hundred and sixty horses. The command proceeded to Fort Griffin, arriving there December 27, 1874, having been nine days in making a march of only one hundred miles. The wagons had to be pulled

out of the mud by dismounted men. The Regiment took posts in the Indian Territory in 1875.

On Nov. 25, 1876, an expedition under Gen. Mackenzie, comprising B D, E, F and M troops 4th Cavalry, while scouting on the Powder River came upon Dull Knife's band of Cheyennes. The commanding officer's report is as follows:

"About 12 o'clock M. on the 24th inst. while marching in a southwesterly direction toward the Sioux Pass of the Big Horn Mountains I was met by five of the seven Indian scouts who had been sent out the evening before who reported that they had discovered the main camp of the Cheyennes at a point in the mountains fifteen or twenty miles distant. The command was halted until near sunset and then moved toward the village intending to reach it at or before daylight. Owing to the nature of the country which was very rough, and in some cases difficult to pass with cavalry the command did not reach the village until about half an hour after daylight. The surprise was however, almost if not quite complete. The village, consisting of 173 lodges and their entire contents, was destroyed. About 500 ponies were taken and 25 Indians killed whose bodies fell into our hands, but from reports which I have no reason to doubt I believe a much larger number were killed. Our loss was one officer and five men killed and twenty-five soldiers and one Shoshone Indian wounded. Lieut. McKinney, 4th Cavalry, who was killed in this affair, was one of the most gallant officers and honorable men that I have ever known."

In March, 1880, E, K, L, M and D were at Fort Garland, Colorado, preparing for an expedition into the Uncompaghre Ute country. On May 19, 1880, the five companies under Maj. E. B. Beaumont left Garland and proceeded via Alamoso, Saquache for the Cochetopa Pass, and crossing the Rocky Mountains there arrived at Los Pinos Agency on the Uncompaghre River May 31. Gen. R. S. Mackenzie commanded the expedition which consisted of a battalion of the 19th Infantry and one of the 4th Cavalry. Commissioners were present negotiating with Ouray the Uncompaghre Ute Chief for the removal of his band from that country to a reservation on the Green River. While negotiations were in progress the 4th Cavalry scouted the Grand River and Grand Mesa country. In the fall the troops returned to their stations in Kansas. In May, 1881, Companies A, B, D, K and L returned to the Uncompaghre country and moved the Uncompaghre Utes to their new reservation. The Apaches having broken out in Arizona Gen. Mackenzie was ordered there with a portion of his regiment which was finally concentrated in posts in New Mexico with headquarters at Santa Fé. Gen. Geo. A. Forsyth, lieutenant-colonel of the regiment, took post at Fort Cummings from whence he scouted into Arizona and had a spirited fight in the Stein's Peak range, Lost Cañon.

In June, 1884, the 4th Cavalry was ordered to Arizona where the companies took post at Huachuca, Bowie, Lowell and McDowell. During '85 and '86 several detachments of the 4th Cavalry were in the field operating against the Chiricahua Apaches.

In May, 1885, a party of about fifty of the Chiricahua Indian prisoners escaped from the White Mountain Reserve in Arizona, headed by Geronimo and Natchez, and entered upon a career of murder and robbery unparalleled in the history of Indian raids. Gen. Miles organized a well-equipped force under Capt. H. W. Lawton, 4th Cavalry. This command with great energy

and persistence kept on the trail, overtook the band in the mountains, capturing nineteen horses and all the enemy's supplies and finally, in September, rounded up the hostiles and brought about their surrender. Gen. Miles reported that Capt. Lawton

"In this remarkable pursuit followed the hostiles from one range of mountains to another, over the highest peaks, often 9000 and 10,000 feet above the level of the sea and frequently in the depths of the cañons where the heat in July and August was of tropical intensity. A portion of the command leading on the trail were without rations for five days, three days being the longest continuous period. They subsisted on two or three deer killed by the scouts and mule meat without salt."

Among others entrusted with important duty was Captain Wirt Davis, 4th Cavalry, who crossed into Mexico in July, making a forced march in pursuit of Geronimo. That officer together with Lieuts. Elliott, Walsh and Benson were highly praised in the annual report of the Department Commander.

The operations of the regiment during the year cover a vast territory. Capt. Hatfield's troop returning from a successful scout, while passing through a deep and narrow cañon, embarrassed with captured property, was attacked by the hostiles and a sharp fight ensued. "There were several cases of conspicuous bravery displayed in this fight; the action of Sergeant Samuel H. Craig was most heroic and very worthy of praise. First Sergeant Samuel Adams, and Citizen Packer George Bowman exposed their lives in attempting to rescue John H. Conradi of the troop, who lay seriously wounded on the ground, but still using his rifle to good effect. This act of bravery and heroism would have been richly rewarded had not this unfortunate soldier received a mortal wound as he was being borne from the field by his devoted comrades.*"

The service of the regiment during the next three years was uneventful. During the fall of 1889 a camp of instruction was established near Fort Grant, Arizona, where twelve troops of cavalry, four of infantry, and a detachment of the hospital corps were assembled under Col. Compton, and for a month were exercised in all field manœuvres. On the night of Oct., 8 Mexican desperadoes fired upon a detachment of Troop I, while encamped at Mescal Springs, mortally wounding two enlisted men.

In May, 1890, the regiment was transferred from Arizona to the Departments of California and Columbia with headquarters at Fort Walla Walla, Washington. In Oct. 1891, Troop C changed station to Fort Bidwell, Cal. In Feb. 1892, Troops I and K were assigned to duty in the National Yosemite and Sequoia Parks respectively.

During the forty years of its official existence the Fourth Cavalry has had seven colonels—men of distinction in their profession: Edwin V. Sumner (3 March '55–16 March '61), who moulded the regiment after the old dragoon pattern and became one of the great generals of the Army of the Potomac; Robert E. Lee (16 March '61–25 April '61), afterward the famous Confederate chieftain; John Sedgwick (25 April '61–9 May '64), the able Union soldier who gave up his life at the head of his corps in the Wilderness; Lawrence

* Annual Report, 1886, Gen. Miles.

P. Graham (9 May '64-15 Dec. '70), one of the heroes of Resaca de la Palma; Ranald S. Mackenzie (15 Dec. '70-1 Nov. '82), the brilliant young cavalryman and scourge of the border Indians; William B. Royall (1 Nov. '82-10 Oct. '87), scarred veteran of two wars and innumerable conflicts with savages; and Charles E. Compton (19 Oct. 1887) the present head of the regiment—a fine type of the volunteer and regular service.

Behind these leaders have ridden, boot to boot, for thousands of miles over trackless deserts, through dangerous cañons, up the faces of frowning cliffs and across rivers broad and deep, dusty columns of fearless horsemen; many have left their bones bleaching on the burning sands of Texas, in the glare of an Arizona sun or resting in more or less "hospitable graves" in Kansas, Virginia, and Georgia.

The deeds of these brave American cavaliers deserve to be chronicled at greater length than is practicable here; in these peaceful days there is no nobler professional task to which one of its younger officers can devote himself than to fully record the achievements of the regiment to which he has the privilege and honor to belong.

TABLE OF LOSSES SUSTAINED, 1861-65

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TABLE OF LOSSES SUSTAINED BY EACH OF THE REGULAR REGIMENTS DURING 1861-65.
Compiled by Captain W. P. Evans, 10th U. S. Infantry.

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No. of Companies		Killed and Died of Wounds,		Averag ^e loss per Company		Died of Disease, Accidents, in Prison, etc.		Total Deaths from all causes,		Averag ^e per Company			
Organized		Emm ^{is} ited.		Officers.		Emm ^{is} ited.		Officers.		Emm ^{is} ited.			
1st Cavalry	12	9	73	82	6.8	2	91	93	11	164	175	14.6	
2d Cavalry	12	5	73	78	6.3	3	92	95	8	165	173	14.4	
3d Cavalry	12	2	39	32	2.7	3	105	108	3	135	140	11.7	
4th Cavalry	12	6	62	52	5.2	1	106	109	4	171	171	14.2	
5th Cavalry	12	7	65	67	5.6	2	99	92	9	150	159	13.2	
6th Cavalry	12	7	59	52	4.1	1	105	107	3	156	159	13.2	
7th Cavalry	12	6	75	59	6.8	-	116	116	6	161	197	16.4	
8th Cavalry	12	6	55	55	5.5	-	118	119	6	168	174	14.5	
9th Cavalry	12	5	39	43	3.4	1	67	70	5	146	111	9.2	
10th Cavalry	12	6	87	93	7.8	4	119	125	6	216	180	15.0	
11th Cavalry	12	7	87	94	7.8	4	145	146	8	232	240	20.0	
12th Cavalry	10	6	75	81	6.1	-	116	116	6	191	197	19.7	
13th Cavalry	10	8	68	96	9.6	1	58	59	9	146	155	15.5	
14th Cavalry	10	10	41	41	4.1	-	48	48	2	97	89	8.9	
15th Cavalry	10	2	39	41	6.0	1	61	62	3	119	122	12.2	
16th Cavalry	10	2	56	61	6.0	1	61	62	3	119	122	12.2	
17th Cavalry	10	2	46	20	2.0	1	35	37	4	53	57	5.7	
18th Cavalry	10	2	49	31	3.1	1	43	44	3	72	75	7.5	
19th Cavalry	10	2	50	52	5.2	3	56	59	5	106	111	11.1	
20th Cavalry	10	1	15	16	1.6	4	47	51	5	62	67	6.7	
21st Cavalry	10	1	-	86	8.6	3	49	52	6	178	20	2.0	
22d Cavalry	10	3	83	86	8.6	3	58	59	9	132	138	13.8	
23d Cavalry	10	10	41	41	4.1	-	48	48	2	97	89	8.8	
24th Cavalry	24	8	117	125	5.2	2	86	88	10	203	213	21.3	
25th Cavalry	16	8	118	126	7.9	3	190	193	11	398	319	20.0	
26th Cavalry	8	3	55	58	7.2	7	121	128	10	176	186	23.2	
27th Cavalry	24	8	158	166	6.9	2	206	208	10	364	374	11.4	
28th Cavalry	20	3	131	134	5.7	1	245	229	4	359	363	18.1	
29th Cavalry	24	7	92	99	4.0	2	179	181	9	271	280	21.1	
30th Cavalry	10	9	92	101	10.1	2	160	162	11	192	203	20.6	
31st Cavalry	17th Infantry	10	10	9	9	9	104	104	2	246	252	15	
32d Cavalry	18th Infantry	11	3	55	58	5.3	2	124	126	5	179	184	17.6

THE FIFTH REGIMENT OF ARTILLERY.*

BY FIRST LIEUT. JAMES C. BUSH, 5TH U. S. ARTILLERY.

ON May 4th, 1861, in conformity with the proclamation of the President, a new regiment of 12 batteries was added to the artillery arm of service and became known as the Fifth of the series.*

Congress confirmed this act of the President, July 12th (approved July 29) of the same year, but all appointments dated from May 14th.

Differing in organization from the older regiments, the new one comprised only field batteries, being in this regard the first entire regiment so equipped in the Regular Army. But it must not be inferred that the Fifth was designated by law as a light artillery regiment. "Nowhere in the act of July 29th do the words 'field or light artillery' occur, nevertheless, the batteries received the personnel belonging to field-artillery only. This, together with the other fact of the mounting, equipping and sending out as field artillery all the batteries, does not leave in doubt that Congress intended the Fifth to be a field artillery regiment."

Though formed only the previous May, we find one battery (Griffin's, D) in the thick of the fight at the first battle of Bull Run, July 21.

Orders No. 3, Headquarters Military Academy, Jan. 7, 1861, directed Lieut. Griffin, Tactical Department, to form a light battery of four pieces, with six horses to the piece. Enough men to make the command 70 strong were transferred from the dragoon and artillery detachments. On Jan. 31, 1861, the command left West Point for Washington where it remained till July 4th when it was assigned as Battery D, 5th Artillery. Captain Griffin, who had been promoted, and transferred to the Fifth, retained command of the battery he had formed.

This same day, July 4, the battery proceeded to Arlington, and thence by short marches to Fairfax and the battle-field of Bull Run, where, with Rickett's battery of the First, it found itself posted opposite the enemy's left. The withering fire poured in by these two soon silenced the opposing batteries and caused the enemy's lines to fall back, pursued by our infantry. Later, in the afternoon, both batteries advanced, in the final attack, to a position previously occupied by the Confederates, when they were suddenly charged from an adjoining wood by a body of infantry and cavalry supposed at first to be Federals. The supports—entirely raw troops—gave way; every cannoneer was cut down, a large number of horses were killed, and notwithstanding the efforts of the officers to rally the supports, most of the guns were captured and the batteries placed *hors de combat*.

Battery D lost during the day 27 men killed and wounded, out of an effective of 95, and 55 horses.

* Condensed from Lieut. Bush's History of the Fifth Artillery.

Captain Griffin received especial mention for the handsome manner in which he had handled his battery, and Lieut. Ames for gallantry.

At "Camp Greble," near Harrisburg, Pa., a depot of instruction was established in June, Lt.-Col. T. W. Sherman, 5th Artillery, commanding. Here recruits were received and drilled and batteries fitted out for the field, the State of Pennsylvania furnishing most of the recruits.*

Bvt. Brig.-Gen. Harvey Brown, Colonel 5th Artillery, after successfully sustaining the siege of Fort Pickens with his troops, came north and assumed command of the regiment, broke up Camp Greble and transferred the headquarters to Fort Hamilton, N. Y. Harbor, in April, 1862. Here the colonel and headquarters remained till General Brown's retirement, August 1, 1863. Colonel H. S. Burton, who practically succeeded him, was in the field and commanded the Artillery Reserve, Army of the Potomac, during the Wilderness campaign, until the breaking up of the Reserve, May 16, '64. In the latter part of July he took station with the regimental headquarters at Fort Richmond, New York Harbor.

Lt.-Col. T. W. Sherman and Major Thomas Williams, Fifth Artillery, after successively commanding Camp Greble, were made general officers of volunteers, and never served with the regiment in the field.

1st Lieuts. Henry A. DuPont and J. B. Rawles were respectively the first regimental adjutant and quartermaster.

II.

Early in April McClellan's army disembarked at Fort Monroe, and a few days later was brought to a stand before the intrenchments of Yorktown.

In the advance towards Richmond, after the evacuation of Yorktown, the seven batteries, A, C, D, F, I, K, M, sustained their part in various engagements, notably F at Williamsburg and D in Porter's flank movement to Hanover Court House.

It would be impracticable within the space allowed, to write any adequate account of the part performed by different batteries of the Fifth during the battles, sieges and engagements, 108 in number, of this and other campaigns of the war. We can give only an outline of the general movements, with a brief reference to actions in which certain batteries particularly distinguished themselves.

Three kinds of field pieces composed the armament, 12-pdr. Napoleons, 10-pdr. Parrott rifles and 3-inch ordnance rifles. Most of our batteries received one kind of gun, but at the opening of this campaign two of them (A, F) had four 10-pdr. Parrotts and two Napoleons assigned to each organization.

Four batteries of the Fifth (C, D, I, K) assisted in the heavy artillery fire which met A.P. Hill's attack (June 26) at Mechanicsville, in Lee's effort to force a passage towards McClellan's right.

* Regimental orders No. 1, dated Harrisburg, Penn., July 4, 1861, Lieut. Col. T. W. Sherman, 5th Artillery, commanding, assigned the captains as follows:

A, George W. Getty; B, James A. Hardie; C, Truman Seymour; D, Charles Griffin; E, Samuel F. Chalfin; F, Romeyn B. Ayres; G, Richard Arnold; H, William R. Terrill; I, Stephen H. Weed; K, John R. Smead; L, Henry V. DeHart and M, James McKnight.

Transfers, April, 1861:
Seymour from C to E, Chalfin from E to L, DeHart from L to C.

After a severe struggle the enemy retired with heavy loss, the artillery taking a conspicuous part in achieving the result.

The position at Beaver Dam Creek had its right flank so far in the air as to be easily enveloped by Jackson's force. The Federals fell back to the high ground at Gaines' Mill, where Lee attacked them next day with 124 regiments and 120 guns against Porter's force of 49 regiments and 96 guns.

"As the battle progressed, the batteries in reserve were thrown forward and took the best position available. The extreme simplicity of the battle favored this, and enabled battery commanders (Smead and Kingsbury among others) to supplement by their own judgment what was lacking in the proper organization and command of the artillery."

Just before sunset—the last charge of the Confederates—80 guns were concentrated, virtually in one battery, covering the withdrawal of the retiring infantry. "These opened successively as our troops withdrew from in front of their fire, and checked in some places, and in others drove back the advancing enemy."

In this last position Battery D remained till after dark, when it was withdrawn and ordered towards Malvern.

"Two regular batteries (Weed's I, and Tidball's of the Second), almost entirely unsupported, were posted on the extreme right flank, and by their united and well sustained fire were enabled to repel three powerful assaults and prevent Jackson from enveloping and crushing in that flank. Jackson in his report says that he brought up parts of four battalions of batteries, in all about 30 pieces, to break this flank. The two batteries referred to withstood a good portion of the firing of these pieces."

General Sykes in his report states: "It is not too much to say that the enemy's attack on my right flank was frustrated mainly by the services of Captains Weed and Tidball."

On the extreme left the enemy gained a strip of woods towards dusk and forced the line, coming through in great numbers. General Cooke, fearful for the safety of three batteries, DeHart's, Easton's and Kerns', which had played an important part during the day at that point, ordered a charge of his cavalry. A volley of musketry broke the charge and sent the troopers and many riderless horses in utter rout to the rear through the batteries. Before the latter could recover from the confusion thus produced, the enemy were upon them.

"Captain De Hart's battery (C) did its best service, keeping its ground and delivering its fire steadily against the advancing enemy. Officers and men displayed the greatest gallantry, but no efforts could repel the rush of a now successful foe, under whose fire rider and horse went down and guns lay immovable upon the field." Captain De Hart was wounded at this time, and died not long after at Fort Hamilton, N. Y.

Captains Smead, Weed, De Hart and Lieut. Kingsbury received high praise "for the superb manner in which their guns were handled."

Thence to the James, every day was a fight, and our batteries struggled along with the rest, the horses held ever ready to move at a moment's notice.

Having repulsed the enemy at points where he had endeavored to break

the retreating column, the Federals assembled their army and made a final stand on Malvern Hill the morning of July 1.

Porter's corps and Couch's division occupied the left and upon them the brunt of fighting fell. Here were posted our batteries (A, D, I, K).

"Brigade after brigade formed under cover of the woods, and started at a run to cross the open space and charge the batteries, but the heavy fire of our guns, and the steady volleys of the infantry, sent them reeling back to shelter."

During one of these assaults Battery D so shattered a regiment charging upon it, that the infantry bolted, leaving their colors which were afterwards awarded to the battery.

"Just as the sun was setting, the enemy made his last and most determined assault, which fell entirely upon Porter. It seemed as though he must give way to the overwhelming pressure." But at this critical moment Colonel H. J. Hunt pushed forward the batteries of the Artillery Reserve (A and I) and an almost continuous battery of about 60 guns was opened on the enemy, crushing him back into the woods from which he did not again return.

Ames' battery remained on the firing line, in a particularly exposed position on the extreme left, during the entire day, and fired 1392 rounds of ammunition. 1st Lieut. Adelbert Ames and his subalterns, James Gillis and George W. Crabb, received particular mention for gallantry and skill both at Malvern Hill and Gaines' Mill (Golding's).

The Federals retired to their base, Harrison's Landing, whither our other batteries (C, F, M,) had already gone.

III.

Lee soon set on foot a new campaign towards the old battle-ground of Bull Run, in which quarter an army had been created under General Pope. Thither too the Army of the Potomac was gradually transferred.

After some preliminary manœuvring, the opposing forces met in action near Manassas, Va., August 29-30. Battery C took part in the fight of the 28th, C and D in that of the 29th and C, D, I, K, in that of the 30th.

"Despite hard blows, the Federals were forced back all along the line. Had not a successful stand been made by a hurriedly assembled force massed on the Henry house hill, the afternoon of the 30th, the disaster would have been fatal to the Army of Virginia."

On the hill all our batteries took position.

As the broken columns fell back, Meade's and Seymour's brigades of Reynold's division, and their three batteries (Ransom's, C), were thrown in to resist the advancing enemy.

"The brigades and Ransom's battery after hard fighting moved to the Henry house, which position they most gallantly maintained for two hours," when they were ordered toward Centreville.

Hazlett distinguished himself in the desperate endeavor of Warren's brigade to protect the left of Sykes' division against an attack of greatly superior numbers, just before retiring to the Henry house.

Battery D had been ordered to an important position in support of an attack of our infantry, when Hazlett suddenly found that all the troops on

his left had been withdrawn, not even leaving pickets. He applied to General Warren on his right for support and received it. Not long after, the Confederates discovered this exposed flank and attacked.

"The enemy poured upon this little command a mass of infantry which enveloped and almost destroyed it, completely piercing our line," writes General Sykes. "It became necessary to change our ground. This the brigades accomplished under a severe artillery fire. Weed's, Smead's and Ransom's batteries moving with and near them. After an interval, the remains of my command united on the plateau where my artillery joined me."

Captain Smead was unfortunately killed in bringing off his guns, and the command devolved upon Lieut. Van Reed who retired the battery to the Henry house and, later, conducted it to Washington.

"Weed was in action throughout the day, and strengthened the reputation he had already acquired" (Sykes' report).

Hazlett remained on the hill, firing, after his division had left, till ordered away by General Hooker.

IV.

No sooner had the broken members of Pope's army been gathered within the defenses of Washington, than McClellan, reinstated, found it necessary to move up the left bank of the Potomac to encounter his old foe on the soil of Maryland.

He first met Lee (Sept. 14) at the passes of South Mountain, through which the latter was withdrawing from Frederick to a strong position on the Sharpsburg ridge, extending across a bend of the Potomac, behind Antietam creek.

Batteries C and F participated in the fight of the 16th and A, C, D, F, I, K in the main one of Sept. 17th, Antietam.

Battery A (Lieut. Charles P. Muhlenberg) was attached to Rodman's division, IX. Corps, Burnside's, and took position near bridge No. 3 on the left. In the afternoon, after shelling the opposite bank during the day, Muhlenberg crossed over with his division in the attack upon the Confederate right.

Weed, Hazlett and Van Reed took position at the centre, near bridge No. 2, with Porter's corps.

The batteries of Weed and Van Reed were among those that did such effective work against Jackson's right near the Dunker church. Of these Jackson says: "The Federal batteries, so posted on the opposite side of the Antietam as to enfilade my line, opened a severe and damaging fire."

Ayres (F) was in the thick of the fight in his old division (Smith's, VI. Corps), while Ransom (C) remained with the Pennsylvania Reserves, now Meade's division of the I. Corps, Hooker's, on the right, where the severest fighting took place.

"At about 10 o'clock," wrote Lieut. Gansevoort, who actually commanded Battery C during the day, "General Hooker ordered our battery to the extreme front, and took it there himself. We passed through a wood, then over a ploughed field into a pasture.

"The infantry on our right fled, and also on our left. As we came in, a battery on our left retired, and we were left alone without support. The rebels were coming down upon us, and we would have retired to save our

pieces; but many of the horses were killed and it was impossible. We therefore continued firing; and, after a short time, the horses of the caissons came up with the caisson limbers, containing fresh ammunition. The enemy after a while retired, and with the last horses we also retired, having accomplished our mission, but with great loss."

General Meade in his report says:—"I cannot close this report without calling your attention to the skill and good judgment, combined with coolness, with which Captain Ransom, his officers (Lieutenants Weir and Gansevoort) and men, served his battery. I consider this one of the most critical periods of the morning, and that to Captain Ransom's battery is due the credit of repulsing the enemy."

Smith's division also attacked on the right and with it Ayres' battery (F). Captain Ayres says:—"My own battery was brought upon the line under heavy fire at about 11:30 o'clock A. M. From this time it was mostly under the command of First Lieut. L. Martin, my duties (chief of artillery) calling me to other points on the field.

"The splendid services of the battery of Lieutenant Martin, 5th Artillery, posted near my right," reported General Irwin, "attracted the admiration of all who saw it in action. For several hours it engaged the enemy at short range and with deadly effect. In this action I felt a particular interest in Lieut. Martin's battery, for to its fire the safety of my brigade may be largely imputed. Had he not checked the heavy fire from the batteries of the enemy, they would have destroyed the greater part of my command."

V.

The Confederates retired into Virginia, whither the Northern army followed, and by the end of November, 1862, our batteries found themselves at Falmouth, opposite Fredericksburg.

Batteries A, C, D, F, I and K took part in the battle of December 13.

The artillery, except one battery for each division, was withdrawn from the corps and temporarily attached to the Artillery Reserve, and all arranged in four divisions posted in positions favorable for the purpose. Battery K (Lieut. D. H. Kinzie) alone of the Fifth, remained permanently with the Reserve and served in the second of these divisions. Battery D (Hazlett) fought in the first, and Battery A (Gilliss) was temporarily attached to the third division on December 11, and aided in covering the crossing of the troops. On the 13th it crossed the river and remained in Fredericksburg during the fight as also did Battery I (Lieut. M. F. Watson).

Batteries F (Lieut. Leonard Martin) and C (Captain Ransom) crossed the river and did gallant service in the attack of Franklin's Grand Division against the Confederate right.

Lieut. Martin received mention for the gallant style in which he commanded his battery.

VI.

The dreary winter wore away in the cantonment at Falmouth, and in April the defeated army, now recuperated, moved by its right flank across the river to Chancellorsville, again facing Fredericksburg.

General Hooker, who had assumed command prefaced this movement by a feint under Sedgwick, below Fredericksburg, while he cleverly stole a march by the upper Rappahannock to the left flank of Lee's army.

With his wonted boldness, Lee divided his force, and sent Jackson around his adversary's right to take him in reverse and thus cut him off from the U. S. Ford.

In the battle that followed, (May 2, 3, 4) the Fifth was represented by Batteries C, D, F, I and K. On May 1, Battery K of the reserve moved to the north side of the river, covering Banks Ford, where it remained during the fight.

Meanwhile Hooker weakened his right and thus enabled Jackson to complete his manoeuvre and crush the XI. Corps (May 2). On the morrow, by dint of massed blows, Lee fairly drove the Federal army into a corner.

The batteries, as a rule, stuck closely to their divisions and were posted without regard to concert of action and often where they were entirely useless. "The woods seemed full of batteries."

Battery D (Hazlett) formed one of a group of batteries on a knoll at the left of the line. The favorable position of these batteries undoubtedly deterred any attack upon them.

Battery C (Ransom) (April 28) marched with its division a few miles below Fredericksburg where it became engaged with the enemy while covering the crossing of the troops, and lost a few horses. On the 30th it crossed the river, and thence marched to Chancellorsville where it took position (May 3) in a group of batteries on the front and right of the army.

Battery I (Watson) after the action of May 1, took position near the Chancellor House and on the 3d formed one of a group of batteries collected by Captain Weed.

"The Federal troops were forced back to the new line, the centre occupying the open space on which stood the White House, which line also had a salient, the apex of which, pointing in the direction of the Chancellor House, was about three-fourths of a mile in rear.

"General Meade (V. Corps) directed Captain Weed, his chief of artillery, to collect all the batteries that he could and place them in position in this salient. Thus armed with proper authority, that energetic officer soon had 56 pieces in a commanding position looking in the two most exposed directions."

During this and the following day the enemy made attacks upon Weed's batteries, but they were never driven home, and the line held its ground till the whole army retired.

Weed's services on this occasion obtained for him promotion to a brigadier generalcy.

Battery F (Martin) crossed the Rappahannock in Sedgwick's command (May 2), after covering the crossing of his division (Howe's). The next morning it took positions so as to reach the heights held by the Confederates and rendered efficient service in keeping down their fire.

The battery accompanied the infantry in its assault against a position where Burnside had lost 13,000 men only a short time before, and, moving with the firing line, arrived on the crest but a few seconds after its capture.

Early next morning, May 4, the enemy made a determined attack against Howe's division, which was successfully repulsed by Martin's battery and a portion of Neill's brigade. But in the afternoon Lee turned all his available force against Sedgwick, who had been ordered to rejoin the main army. Our battery kept up a sharp enfilading fire, changing position as the enemy

advanced, and withdrew only when its ammunition was exhausted and the enemy within a few yards of its guns.

The Confederates retired with the growing darkness, and during the night Sedgwick withdrew across Bank's Ford.

"Great credit is again due our artillery," writes General Howe, "for their services in repelling the attack. In the action at Guest's farm the section under Lieut. Simon, 5th Artillery, and Captain Rigby's battery were largely instrumental in breaking the attack of the enemy's left, and the artillery on our left, under Captain Martin, 5th Artillery, was used with great effect in checking the advance of the enemy on that point, and afterwards, in connection with Lieut. Butler's battery (2d Artillery), in wholly breaking the attack."

Battery L (Chalfin) had been stationed since its organization just outside of Baltimore, Md., from whence it took part in the effort to head off Stuart's raid (Sept. 1862), and in May '63 joined General Milroy's division in the Valley under command of Lieut. W. F. Randolph.

VII.

Now supervened another rest in the thrice occupied Falmouth camp, while Lee planned a second raid into the Northern States. Still grasping with his right the old defenses at Fredericksburg, he covertly advanced his left, under Ewell, to Culpeper and thence into the Shenandoah Valley. Ewell pushed rapidly up the valley and trapped Milroy at Winchester from whom he captured some 4000 prisoners and much material, among which figured the equipment of Battery L and most of its personnel.

Battery L, after participating with credit in certain minor affairs, was ordered by General Milroy on the 14th, to occupy, without adequate support, an isolated, unfinished outwork dominated by a mountain to the west, within range. Here the battery remained till late in the afternoon, when the enemy opened upon it with plunging fire from 16 guns which he had succeeded in getting into position on the mountain. Many of the men and most of the horses were shortly killed or wounded, and caissons and limbers blown up. The battery was so disabled inside of ten minutes that it became impossible to remove the guns.

Suddenly the enemy charged with five regiments which had been massed behind a neighboring ridge in front. The timber had been only partially cut away and troops could approach unseen to within 100 yards. Nothing inside the work could stop this onslaught, but our men stood by their guns till the enemy had planted his colors on the parapet. Not till then did Randolph order his men to fall back. Lieut. Spooner with 18 men escaped. Lieut. Randolph was carried, wounded, into the town and fell into the hands of the Confederates.

As soon as Hooker discovered the nature of Lee's movements, he started his army for the Potomac and concentrated it at Frederick, Md.; here Meade succeeded him in command. The opposing forces met at Gettysburg where Batteries C, D, F, I, K, sustained their part in the battle of July 2, 3, 4.

The XII. Corps arrived on the field at sundown July 1, and took position on the extreme right, resting on Culp's Hill. Its artillery brigade (K) was held in reserve on account of the unfavorable nature of the ground till the

afternoon of the 2d, when space was found for one section of Battery K. The enemy opened immediately upon this section and a spirited duel resulted in the silencing of the Confederate guns. The conduct of Lieut. Van Reed, who commanded his section, was mentioned with praise in General Hunt's report.

The next day the entire battery occupied a trying position opposite the centre of its corps and rendered efficient service in repelling the attack on that part of the line.

Sickles had moved his corps to the front, into a peach orchard near Little Round Top, so as to form an angle not only with itself but with the rest of the line.

After Longstreet's attack had developed and Sickles was being forced back to the main line, Battery C was placed in position on the right front of his corps.

"I opened with solid shot and spherical case," says Wier, "and as the enemy continued to advance, with canister. Soon it was reported that we were out of canister. The enemy being within a few rods of us, I limbered up, and was about to retire when a regiment of their infantry appeared on my left and rear and opened fire. I endeavored to get my guns off the field, but lost three of them, as some of the drivers and horses were disabled while limbering up. The guns were subsequently recovered and during the afternoon of July 3, Wier's battery, among others, was placed in position in front of the advancing enemy—Pickett's charge.

"I was conducted to General Webb's line," states Wier, "and came into battery under a heavy fire. I opened at once with canister. After a time our infantry charged and the enemy were driven back."

Captain Ransom and Lieut. H. H. Baldwin were wounded.

While Battery I was awaiting orders during Longstreet's attack of the 2d, it was seized upon by a staff officer of General Sickles and placed in position with the III. Corps.

Lieut. Watson was soon wounded and the command devolved upon Lieut. MacConnell, who writes :—

"The battery was without support of any kind. The enemy appeared shortly after taking position. As they approached the battery poured in canister until our men and horses were shot down or disabled to such an extent that the guns had to be abandoned."

"They were, however, recaptured by the bravery and determination of Lieut. Samuel Peebles, 5th Artillery, who, having procured the services of the Garibaldi Guard, took a musket and led the charge himself, driving the enemy from the guns, and, retaking everything that had been lost, conveyed it safely to the rear."

Lieut. Peebles was commended for "heroic conduct" and First Sergeant Lemuel Smith for gallantry.

When General Warren discovered the attempt to take Little Round Top on the afternoon of July 2d, he hurriedly obtained Vincent's brigade, V. Corps, to protect the summit.

"The contest here became furious and the rocks alive with musketry. Hazlett's battery (D), supported by O'Rorke's regiment of Weed's brigade,

was sent to the support of Vincent. Hazlett's guns were dragged by hand, with great labor, through the rocks and bushes to the crest of the mountain, from which position they opened a damaging fire upon the flank of the enemy."

"Night closed the fight. The key of the battle-field was in our possession intact; but Vincent, Weed and Hazlett, chiefs lamented throughout the corps and army, had sealed with their lives the spot intrusted to their keeping, and on which so much depended." (Sykes.)

Weed had been hit by a sharpshooter who was picking off our officers, and Hazlett was struck while leaning over his friend.

The six rifle guns of Battery D took part, under Rittenhouse, in the cannoneade of July 3, enfilading Pickett's lines, and by their steady and accurate fire caused the charge to "drift" in the opposite direction.

Later, with the rest of the army, the batteries followed Lee back into Virginia where the opposing forces again faced each other near Culpeper.

From here Lee dispatched Longstreet to assist Bragg in the impending battle of Chickamauga. Upon learning this the War Department detached the XI. and XII. Corps (Battery K) to reinforce Rosecrans, but the troops arrived too late for the fight.

Battery K, Captain Bainbridge, was attached to Geary's division, XII. Corps, Army of the Cumberland.

It was relieved from duty with Geary's division about the middle of March, 1864, and became part of the Artillery Reserve, Army of the Cumberland.

After minor services it was assigned, about the first of November, to the garrison artillery of Chattanooga, Tenn., where it remained till the end of the war.

VIII.

Battery H, after partial recruitment in Pennsylvania under direction of Captain William R. Terrill, was transferred to Carthage, near Cincinnati, Ohio, where three officers and 141 men reported present for duty the last day of October. In obedience to telegraphic instructions Terrill went to Munfordville, just north of Bowling Green, where the battery remained till the middle of February, 1862.

During the campaign which opened the following spring, it was attached to Rousseau's brigade of the 2d Division, McCook's, General Buell's Army of the Ohio.

When Fort Donelson fell, the battery marched to Nashville, and on April 6, found itself at Savannah on the Tennessee River, not far from Pittsburg Landing, to which place General Grant had transferred his army. General Halleck, who now commanded the department, had ordered General Buell with about 37,000 men, across country, to join the army at Pittsburg Landing, and our battery had, of course, accompanied its brigade.

After waiting in a drenching rain all night, Terrill's battery embarked by daylight, and immediately after landing, "hurried to the field, where it was ordered into action on the left with Nelson's division, the advance one, against which the greater numbers of the enemy pressed heavily.

"I advanced the centre and left sections onto the skirmish line, where the fire was most galling," writes Captain Terrill. "I was compelled to this in order

to gain a crest of a ridge from which to fire upon batteries that had opened on our skirmishers. After silencing the enemy's fire they seemed to receive fresh troops, for with vociferous cheers they now charged along the whole line. The infantry with us gave way before the storm of musket-balls, shot and shell, which was truly awful. Lieut. Ludlow's section was immediately sent to the rear to protect the withdrawal of Lieut. Smyser's. One of Lieut. Ludlow's caissons had to be abandoned, all the horses having been killed, but we recovered it later in the day.

"I served one of Lieut. Smyser's pieces, and he the other. We fixed prolonges and fired retiring. The enemy charged us, but were staggered by our discharges of canister, whilst Lieutenants Guenther and Ludlow on our left poured spherical case into them. We checked their advance three times, retiring as they charged upon us. For a time Lieut. Smyser and Corporal Roberson served the fifth piece alone."

By 3:30 p. m. all was quiet in front of Nelson's division, but seeing McCook's command sharply pressed, Terrill called for a detail of men from a neighboring regiment, and advancing his battery, opened upon the guns that were doing so much mischief to McCook's force. "Soon McCook's whole line advanced with a cheer and drove the enemy before them, and the day was ours."

General Nelson writes:—"Captain Terrill's battery was a host in itself. It consists of four 12-pdr. brass guns and two Parrott rifles. Its fire was terrific. It was handled superbly. Wherever Captain Terrill turned his battery silence followed on the part of the enemy.

"Captain Terrill, his officers and soldiers, won for themselves this 7th of April both the admiration and thanks of the 4th Division."

He received a brigadier-generalcy for this action, and was mortally wounded at Perryville while at the head of his brigade, aged 29.

Lieut. Guenther assumed command about the middle of June and soon marched with the brigade when Buell moved eastward to repair the railroad, protect Nashville and threaten Bragg. By a sudden manœuvre the latter stole a march around Buell's left and made straight for Louisville.

Thoroughly alarmed, Buell swung his left in pursuit and finally came upon a portion of the Confederate force, under Hardee, at Perryville, Oct. 8. Half of Buell's army, including the 2d Division, had advanced beyond to Frankfort. Here parts of the battery went into action on the 6th, and again, three days later, at Chessier's store, where "a section of Guenther's battery was handled with the usual vigor and skill of that accomplished officer."

Bragg retreated to Chattanooga and Buell concentrated at Nashville, where he was relieved by General Rosecrans, the last of October. This general made many changes in his army, one of which resulted in transferring our battery to the 3d Division, Rousseau's, XIV. Corps, Thomas'. In the 3d Division it joined the regular brigade commanded by Lieut.-Col. Shepherd, 18th U. S. Infantry.

Towards the middle of November, Bragg advanced to Murfreesboro, Tenn., and in the last days of the year Rosecrans moved against his position. After some skirmishing, the armies confronted each other north of the town at Stone River, Dec. 31.

Rosecrans planned to throw Crittenden across the river upon the opposing right, but scarcely had he crossed the river and launched Crittenden's columns, than he was forced to recall them to the assistance of his already routed right-wing.

To counteract the enemy's assault upon McCook, General Thomas ordered the regular brigade and one other to form in a cedar thicket, facing west, in support of Sheridan. The latter was compelled to fall back about 11 A. M., and this forced Thomas out of the thicket into open ground.

"General Rousseau's two batteries found it impossible to operate in the cedar thicket. This Lieut. Guenther pointed out to General Thomas, a veteran artillerist, and he directed the two to take position in an open field where they would be of service in case the line should be forced back. This had most important results for when the line did fall back shortly, these two batteries not only repulsed the enemy but formed a nucleus upon which other batteries and troops formed, until the line proved impregnable."

"As the enemy emerged from the woods in great force, shouting and cheering, the batteries of Guenther and Loomis, double-shotted with canister, opened upon them. Four deliberate and fiercely sustained assaults were made upon our position and repulsed." (Rousseau.)

It was during one of these charges that the battery captured the flag of an Arkansas regiment advancing upon it.

Guenther gives Lieutenants Ludlow and Fessenden "honorable mention for coolness, gallantry and judgment" in this series of engagements.

"Of the batteries of Guenther and Loomis I cannot say too much," reports General Rousseau. "Both these men deserve to be promoted and ought to be at once. Without them we could not have held our position in the centre."

Bragg retreated from Murfreesboro as a consequence of this battle and it was occupied by our troops. Here the battery remained in camp until the last days of June, 1863, when it marched to Hoover's Gap under Thomas and engaged the enemy in the manœuvre which turned Bragg's right and caused him to retire from his well-fortified position at Shelbyville.

About two weeks later Lieut. Guenther received orders to join Battery I, then reorganizing at Washington, and 1st Lieut. H. M. Burnham took charge.

The position which Rosecrans finally assumed, in front of the town of Chattanooga, faced Chickamauga creek, and here on September 19-20, was fought one of the most severely contested battles of the war.

The assault fell upon Thomas, who commanded this part of the line. The fighting was stubborn, and during the day he was thrust back, but by nightfall regained his old position.

On the first day Baird's division, which included the regular brigade and Battery H, took position at daylight facing towards Reed's bridge over the creek. Here the battery went into position, but shortly advanced with King's brigade and came upon the enemy in a dense wood. While hotly engaged, King was forced to change front to meet an attack from masses of the enemy suddenly approaching on his right. Only one regiment and the battery had time to get into the new position before the blow fell and scattered the entire brigade and the next one to the rear.

Lieut. Fessenden, who, upon the fall of the other two officers, succeeded

to the command of the battery, says: "During the morning, after an all night march, we were ordered forward by General King. The battery was hardly in position before the troops on the right gave way and it was exposed to a most terrific fire of musketry from front and flank. General King ordered us to limber to the rear, but it was impossible to execute the order, since many of the gunners were either killed or wounded, and the horses shot at the limbers. At the first fire, Lieut. Burnham fell mortally wounded; Lieut. Ludlow was also wounded and fell into the enemy's hands, and myself slightly wounded in the side. The battery was taken by the enemy, after firing sixteen rounds of canister." Our troops rallied and recaptured the battery and also took one gun of the Confederates. Lieut. Fessenden, though wounded, kept the field and brought off the pieces, without their caissons, however, as these had to be abandoned through lack of horses.

"I take this occasion to speak in the highest terms of the officers of Battery H, 5th Artillery, 1st Lieut. H. M. Burnham and 2d Lieutenants Israel Ludlow and J. A. Fessenden," reports General King. "The officers of this battery, finding it impossible to retire, remained with their pieces, firing, until they were forcibly taken from them by the enemy."

The departments of the Ohio and the Cumberland were now united under Grant, General Thomas being in command of the Army of the Cumberland. How to drive Bragg's army from his front was the immediate problem before General Grant.

Sherman's part of the task was to capture the Ridge, Hooker's to patrol Lookout Valley, while Thomas concentrated in Chattanooga Valley to hold the enemy there in force. (Nov. 23-24-25, 1863.)

On the 25th, Thomas was ordered to attack all along his front. His troops assailed the field-works, and capturing them, advanced up the Ridge and overran the works at the summit.

Having been supplied with horses from General Sherman's artillery, the battery moved to the front the morning of November 24th under Captain Guenther, who had rejoined at Chattanooga on October 31.

"During the day I was joined by Captain Guenther's battery," says Sheridan, who commanded the 2d Division, IV. Corps, "which I placed on Bushy Knob. On the next morning I directed Colonel Harker to drive in the enemy's pickets from my front. Guenther's battery was moved to a position in front of Harker's centre. In the afternoon, the signal being given, the division advanced under a most terrible tornado of shot and shell, and passed over the first line of pits. Believing the Ridge could be carried, orders were given, and obeyed with a cheer."

"In my special mentions," reports General Sheridan, "must be included Captain Guenther, commanding a battery temporarily assigned to me, to whom I am indebted for valuable services rendered."

The battery encamped at Chattanooga until March 25, 1864, when it left for Nashville, where it remained till the last day of August.

Ist. Lieut. E. D. Spooner assumed command the latter part of September.

On the 29th, the battery proceeded by rail to Tullahoma, Tenn., from whence it participated in the movements against the cavalry leader Forrest, during October, returning to its camp at Nashville the last day of the

month. The next day the few horses remaining fit for duty were turned in at the depot.

In April, 1865, Battery H was transferred to Fort Richmond, N. Y. H., and there remained till the close of the war.

IX.

In November, 1863, Meade crossed the river and routed Lee from Rappahannock Station (Batteries D and F), and forced him to retire behind the Rapidan. Here the two armies remained until the opening of the Wilderness campaign the following spring.

In accordance with the general plan of this campaign the Army of the Potomac (Batteries C-I, D, E, M) and the IX. Corps moved by the overland route on the east of Richmond; the Army of the James (Battery A) moved up the James River; Sigel (Battery B), Crook (Battery B) and later Sheridan with both these forces, and the VI. Corps (Batteries B, L, M) operated by way of the Shenandoah Valley.

So dense was the undergrowth over the country called the Wilderness that artillery became of far less than its normal value. To fire down a road or across a clearing was about all it could do—concert of action almost disappeared.

It is impracticable, therefore, to give more than the barest mention of the services of our batteries from May 4 to June 16.

Battle of the Wilderness, May 5-9, 1864.

Battery C-I was present in position on the 5th, but not engaged. On the 6th it was on the firing line at the time the 3d and 4th Divisions, II. Corps, were driven back into their entrenchments.

Battery D was engaged at times during the afternoon of the 5th against bodies of the enemy passing near the Lacy House. Again on the 6th it was in position, but not engaged.

Battery M was present but not engaged.

Battle of Spottsylvania, May 8-21.

Battery C-I was engaged during the attack of the V. Corps, May 10, and again in the afternoon.

On May 12, it engaged the enemy during the attack of the VI. Corps—one of the bloodiest fights of this campaign. When Hancock had forced the salient, called Bloody Angle,—the key of Lee's position—and had reached the second line, he met stern resistance.

"After the capture of the Confederate works," relates Sergeant W. E. Lines, "we were put in position near the small pine trees so much spoken of, and fired a few rounds of solid shot. While we were waiting, General Wright rode up to Lieut. Gillis and desired a section. Lieut. Metcalf came over to our section and gave the command, and away we went up the hill past our infantry, into position."

"At this moment," writes an eye-witness, "and while the open ground in rear of the Confederate works was crowded with their troops, a section of Battery C, 5th U. S. Artillery, under Lieut. Richard Metcalf, was brought into action and increased the carnage by opening at short range with double canister. This staggered the apparently exultant enemy. In the maze of the moment these guns were run up by hand close to the famous Angle and fired again and again, and they were only abandoned when all the driv-

ers and cannoneers had fallen. In a few moments the two brass pieces of the 5th Artillery, cut and hacked by the bullets of both antagonists, lay unworked with their muzzles projecting over the enemy's works." [*"Battles and Leaders."*]

"This is the only recorded instance in the history of the war of a battery charging on breastworks."

Metcalf's double-canister cleared his own front and undoubtedly contributed to the success gained.

"This battery was gallantly served throughout the day." (Hancock.)

Battery D was in position near the Court House on the 9th, and engaged batteries of the enemy which had opened against the right of our line. On the 10th it opened on troops across the Po during the attack of the II. Corps. On the 14th it again took position beyond the bridge over the Ny, not far from the Beverly House, and on the 18th it formed one of a group of batteries pushed forward to the advanced works and which became engaged in a sharp artillery duel during the II. Corps advance, and continued in action throughout day.

Battery M went into position the morning of the 12th, opened fire and continued in action throughout the day, expending 910 rounds. It was again engaged the 21st upon the movement of the army from the Court House.

Battle of North Anna, May 23-26.

Battery C-I was in position during May 26, but was not engaged other than in covering the recrossing of the troops.

Battery D took position on the north bank of the river and assisted in silencing the enemy's guns during the attack of the V. Corps on the 23d.

Battle of Cold Harbor, May 31-June 12.

Battery C-I was engaged in General Mott's brigade at Totopotomoy Creek against works 300 yards in front, on the 31st. On June 3d and 4th it was in position but not in action. On the 8th it was engaged in Birney's division at Barker's Mill and again on the 12th.

Battery D was engaged the 29th, and took part in a sharp contest near Bethesda Church on May 30th, and was again in position near the pike road and severely engaged under a heavy fire on June 1. During the night it advanced with the main line and took position in a group of four batteries near the pike road on the left of the V. Corps. Here it was "exposed next day to the fire of a large portion of the enemy's lines and to an ugly cross-fire from a detached work" within short range. The sharpshooters were able to work up to within 200 yards and subjected the battery to a trying ordeal, but it remained on the line hotly engaged throughout the day. The next morning, June 3d, during the assault of the II., VI. and XVIII. Corps, this group was pushed forward by battery with the line of battle, "gaining ground under a galling fire of artillery and musketry at considerable loss, the enemy's batteries being posted under cover."

On the 6th of May, Battery A disembarked at Bermuda Hundred, south side of the James, and joined the 1st Division, XVIII. Corps. It participated in the demonstration towards Richmond and was sharply engaged, under Lieut. Beecher, 4th Artillery, in the repulse of the enemy's attack near Drewry's Bluff. On the 27, the corps sailed via Fort Monroe to White

House, Va. From this point it joined the Army of the Potomac in time for the battle of Cold Harbor, and took part in the fights both of the 1st and 3d of June, under command of Lieut. Theodore K. Gibbs, 1st Artillery, who writes the following: "On the 1st of June our corps was ordered to attack the enemy's position, and Captain Elder, chief of artillery, directed the battery to move up to the head of column. The enemy was forming and throwing up works, and the battery opened fire which it kept up till our line, then forming in rear, was ready to charge. The corps passed us and we followed up the movement until a knoll was reached which had quite a depression in front. Here we halted and again opened fire over the heads of our men and continued it until they commenced to ascend the other side of the valley. On the morning of the 3d a section of the battery was ordered to a very exposed position near the IX. Corps under a heavy fire. We threw up a small earthwork and remained in action all day." Here Lieut. Gibbs was severely wounded and was carried to the rear.

Gradually moving successive corps from the right, Grant extended his left towards the James which the army reached and crossed about the middle of June.

Battery F, Lieut. Martin, joined the XVIII. Corps early in July, and our guns were gradually moved up into earthworks, from which they frequently opened as the investing lines drew closer.

Batteries A, C-I, D, E, F and M are credited with the siege of Petersburg, June and July, 1864.

X.

General Hunter's retreat from Lynchburg offered an excellent chance against Washington, which General Early quickly seized. The VI. Corps (Battery M) was hurried to the threatened point, leaving certain batteries behind in the trenches, among them E.

The forces coöperating with the Army of the Potomac from the Valley, consisting of Crook's Kanawha Army and Sigel's troops, were under command of the latter officer.

Sigel moved southward about May 1, but suddenly met the Confederates at New Market, Va., where Battery B was engaged, and suffered a defeat which caused him to retire to the line of Cedar Creek, where he was superseded by General Hunter. This general again moved up the valley and defeated the enemy at Piedmont (Battery B again). Generals Crook and Averell now joined him, and the command, about 18,000 strong, reached Lynchburg a few days later, which place General Hunter assaulted, but unsuccessfully. Here the battery was busily occupied the entire day under Captain DuPont, Chief of Artillery. General Hunter retired, followed by Early, who forced his way into Maryland, resorting to the old game of threatening Washington, but the VI. and XIX. Corps interposed in time.

General Early retired into the Shenandoah Valley, where, after some preliminary manœuvring, the opposing armies met September 19, when Sheridan advanced against Early's right at Winchester.

The VI. Corps, Getty's division leading, advanced through the Berryville gorge, and turning to the left, formed the left of the line. McKnight's and Cowan's batteries were posted just in rear of Getty's right brigade,

"and advancing and firing as the lines advanced, rendered most important service." (Getty.)

General Crook's force arrived on the field some time past mid-day and formed on the right, but the blocking of the gorge road delayed DuPont and his batteries till 3 P. M., when they advanced on the right of the corps and took part in the attack on the Confederate left.

Averell's division with Battery L advanced along a converging line at the extreme right, driving the enemy before them.

Sheridan pursued Early up the Valley to Mt. Jackson, where Averell attacked with Battery L and aided in driving him from this third position.

The Federal army now returned and went into camp, echeloned on ground overlooking Cedar Creek, in the angle between it and the Shenandoah River.

In mid-October Early, reinforced, planned a surprise for our army in its new position. Under cover of a dark night and foggy dawn, Gordon suddenly attacked the left and drove it to the rear in confused retreat.

Battery B and one other occupied a work to the left front of its corps, on a ridge overlooking Cedar Creek and near the point of first attack. While harnessing its teams, just at daybreak, amidst a heavy fire, the battery, under Lieut. Brewerton's command, turned its guns on the enemy, and continued firing canister till they were within a few yards of the muzzles.

Abandoning his limbers, Brewerton ran his guns down the hill by hand to the caissons, unlimbered these, and limbering up his pieces he succeeded in saving five guns and his train, notwithstanding the utter confusion and loss of horses and men. While endeavoring to extricate his last gun, which had gotten jammed among some trees, Lieut. Brewerton was captured and Lieut. Southworth, 2d Artillery, the only other officer present, was killed. Fighting its way, Battery B rejoined the brigade, refitted, and after taking up certain positions in aid of efforts to reform the line, "galloped forward to the firing line as this advanced and did most admirable execution till dark" under Lieut. Holman, 5th Artillery, who was absent at the time of first attack.

First Lieut. H. F. Brewerton and First Sergeant J. A. Webb were commended for coolness and gallantry, and Captain Du Pont, Chief of Artillery, received "particular mention" for "conspicuous gallantry and valuable services." (Crook.)

So rapidly did all this happen that Battery M (McKnight) first went into action just in front of its own camp. Lieut. H. M. Baldwin took charge of two guns and Sergeant Yoder a third, and endeavored to remove them. Only two horses each remained to the limbers, and the two belonging to the third gun being killed, that one went with the others to the enemy who now captured Lieut. Baldwin. The remaining guns were the last to leave the field.

"The guns under command of Captain McKnight were admirably handled and rapidly fired, although under heavy and close musketry fire of the enemy," reports General J. W. Keifer.

Moore's cavalry brigade, with Battery L, guarded the Buckton Ford, some

distance to the left, at early dawn, October 19. They reached the field about 9 A. M. during the hottest part of the fight.

Changing its position in the rapid phases of the battle, Battery L rendered gallant and effective service till the utter rout of the enemy late in the afternoon. The brigade and battery were attached to General Merritt's command.

At a critical period the guns of the horse artillery brigade were the only ones on the field, the others having been captured or driven to the rear disabled. "The Horse Artillery, Batteries K-L, 1st Artillery; B-L, 2d Artillery; L, 5th Artillery, Lieut. Wier, and Martin's battery, 6th New York, rendered invaluable services on this day, as for five or six hours the only artillery used was that of the cavalry, and nobly did they do their duty, having but about two rounds per piece left after the engagement." (Torbert.) The VI. Corps, minus Battery M, returned to the Petersburg lines, and our batteries, B, L and M gradually withdrew; B to Cumberland, Md.; L to Fort Reno, D. C. and M to Fort Sumner, Md., where they remained till the latter part of 1865.

XI.

On the Petersburg line General Warren moved by a détour to the rear August 18, and struck the Weldon Railroad at Globe Tavern. On advancing up the road towards Petersburg he was met by a considerable force which attacked him. As the line fell back Battery D, now under command of Lieut. Van Reed, opened fire, with others of the V. Corps, and silenced the enemy's guns after a sharp fight, aiding materially in repelling the assault.

"Lieut. Van Reed served his battery with distinction on the 21st, the principal service being on that day." (Ayres.)

Before settling down to winter-quarters, General Grant desired to deal one more blow, in hope that some permanent gain might be made with which to close the year.

The force consisted of the bulk of three corps.

Parke assaulted in front, near Hatcher's Run, while Warren, on his left, tried to turn the enemy's right. Both failed of their purpose, upon which General Meade ordered Hancock to halt on the Boydton Road till Warren could coöperate with him. But before these two corps could join, Lee thrust Hill's corps into the gap. The assault fell on Hancock's flank and came near ending unpleasantly, when Egan's division changed front, and after hard fighting, compelled Hill to withdraw.

Lieut. Beck, commanding C-I, reported to General Egan and moved out westwardly with the 2d Division to where the Boydton Road crossed.

General Egan having advanced his line to the north, up the Boydton Road, Lieut. Metcalf was ordered to a position on a ridge to the right, near Hatcher's Run, where he opened on the enemy deploying to his front. Our line again advanced to the neighborhood of the Burgess Tavern, about 300 yards to the left front of Metcalf's position. Here General Egan ordered another section placed, and it went into action under a heavy fire from a battery on the left of the road. Soon another battery opened to the right, enfilading the section, which however kept up a vigorous fire. The centre

section now came up at a gallop and opened at right angles to the first. Two more guns immediately opened from the right and with the others enveloped Beck's two sections in a hail of flying fragments, much of which, however, flew wild through poor practice. Lieut. Metcalf replied with his guns and a lively fight ensued, but the enemy could not drive Beck from his position.

"At about 3 P. M. the enemy commenced a furious assault on our right, which swept away Lieut. Metcalf's section, after killing nearly all the horses and severely wounding the lieutenant, whom they captured. The charge of Egan's division forced them to retire and our infantry hauled off the guns." Beck's guns had immediately advanced and opened upon the point of woods through which the enemy had broken, and aided in repulsing the attack. Here it remained till 8 P. M.

During the afternoon the battery had expended about 700 rounds and had lost 1 officer killed, 1 captured, 14 men killed or wounded, and 4 missing, out of an effective of 77.

"Lieut. Beck is mentioned for the gallant manner in which he maintained his position against a greatly superior force of the enemy's artillery." (Hancock.)

XII.

Battery G remained at Fort Hamilton, N. Y., after its organization till December 18, 1862, when it proceeded south by sea under sealed orders, which being opened while off Mobile, disclosed its destination to be New Orleans, La. The officers were Captain Richard Arnold, 1st Lieut. J. B. Rawles and 2d Lieut. E. R. Craft.

Captain Arnold was made Chief of Artillery, Department of the Gulf, upon reaching New Orleans, and soon after, received a commission as brigadier general of volunteers. He did not again serve with the regiment till some time in 1866, when he assumed command of this same battery at Little Rock, Ark.

The following March it moved to Baton Rouge, and from thence participated in the campaign and siege of Port Hudson, the spring and summer of 1863, culminating in the surrender of that stronghold.

After the first assault at Port Hudson a second was tried, both of which the artillery supported and in which our battery was hotly engaged. Regular approaches were then resorted to; Battery G moved up into an earth-work on the line of investment, where it was almost always under fire, and from which more or less firing continued till the surrender, July 8. It remained in camp at Port Hudson, assisting in rebuilding the fortifications and on other active duty, until the fall, when it returned to New Orleans and there wintered.

It was now made a horse-battery, with four 12-pdr Napoleon guns and a strength of 156 men who elected to join the battery from various organizations serving in the department. It became thoroughly re-equipped and drilled, ready for the campaign up the Red River.

There was more or less skirmishing with the enemy's horse and outposts along the entire Red River route; and near Mansfield, at Sabine Cross Roads, the vanguard met the enemy in force.

Our battery had been assigned to General A. L. Lee's cavalry division and was engaged, more or less, daily in skirmishing and fighting in the advance guard, against the gathering forces of the enemy; until Lee's cavalry, supported by a brigade of infantry, attacked the Confederates at St. Patrick's Bayou, drove them from the position and pursued to Sabine Cross Roads. Here the enemy was found in large force. Soon they attacked and drove the Federals to Pleasant Grove, where they sustained a check. The next day they attacked General Banks' command at Pleasant Hill and were driven off with loss.

The battery had been divided, Lieut. Rawles taking one section and Lieut. Homer Baldwin the other.

The sections were constantly engaged at different parts of the field with the cavalry brigades to which they were attached. On the final retirement of the expedition they united, and again found themselves encamped near New Orleans, from which point our battery proceeded to the vicinity of Mobile, Ala., and took part in the siege of Fort Morgan, after turning in the light battery equipment at the depot.

Battery G appeared upon the scene August 16, 1864, and was at once set to work laying platforms, building magazines, and preparing a battery for two 10-inch mortars. This battery occupied a site about 900 yards from Fort Morgan. Lieut. Rawles commenced firing at 5 o'clock A. M. the 22d, throwing a shell from each mortar every 15 minutes. This was kept up during the day and night with slight variations in rapidity. About 7:30 A. M. the 23d, a white flag appeared, the firing ceased, and at 2 P. M. our troops took possession.

Shortly after this the battery returned to New Orleans and embarked for New York, where it remained at Fort Hamilton until November 1, when it took passage for City Point, Va.

In the Army of the Potomac it was consolidated with Battery D and assigned to the V. Corps, Lieut. Rawles still in command.

XIII.

As the spring of '65 opened General Lee accumulated a supply of rations at Amelia Court House, west of Richmond. In order to retire, as he desired, by the south side of the Appomattox River, Lee must drive Grant from his hold on the Boydton road.

This led to a series of sharp encounters, one of which included the attack on Fort Stedman, near the centre, a movement undertaken by General Lee as a cover for operations by his right.

Battery No. 9 on the right of Fort Stedman was occupied by Battery C-I, which had been temporarily detached with the IX. Corps. Our men were at once at their posts on hearing the firing "and when the advancing enemy were distinguishable in the dusk, opened upon them so hotly as to check and cause them to seek shelter in a depression of the ground, where they were held under canister fire till 7 A. M., when an officer escaping from this position informed Captain Stone that if he would not fire upon them, there were between 200 and 300 of the enemy who would come in. This arrangement was promptly effected."

Battery C-I remained in Forts No. 9 and McGilvery on the IX. Corps

line. At about midnight of April 1, Stone opened fire in the bombardment ordered, and continued with varying rapidity till 3:30 A. M. of the 3d, when he requested of Colonel Ely, commanding the infantry brigade, that if he advanced he would at least take a section of the battery with him. This he promised to do. Soon the order came, and cutting through the parapet, the section advanced as rapidly as possible and arrived inside the city by 4:15 A. M. It was probably the first artillery unit to enter the town. Stone claims that no other artillery had entered the town when he arrived.

The VI. Corps proceeded to Sailor's Creek April 6.

Battery E having been assigned to the 3d Division, VI. Corps, "accompanied the division in all its marches and participated in all engagements." In the afternoon of the 6th, the battery was ordered by General Seymour (5th Artillery) to a position commanding the enemy's lines "and fired with all its guns till the works were carried." The corps continued the pursuit till, on April 9, it halted at Clover Hill where Lee's army surrendered.

On March 30, the V. Corps pushed forward to the crossing of the Boydton and Quaker roads, Rawles's and Vose's batteries being placed at the junction. In the afternoon the enemy made an assault at this point, but met with repulse, "the two batteries doing efficient service." The troops made a rapid march on the 9th and soon came in sight of our lines engaged with the enemy.

In December, 1864, the X. and the XVIII. Corps were discontinued, and the XXIV. and XXV. Corps organized from the troops composing the Army of the James. The former of these two corps, the XXIV., included our batteries A and F.

On March 27, two of its divisions withdrew from the north side of the James, and marching all night, took position behind the II. Corps on the left, leaving the 3d Division (Battery F) to keep the lines. Battery F, Lieut. Beecher, broke camp on the New Market road, April 3, and marched with its division directly to Richmond.

Battery A joined Foster's division, the first, and reaching Hatcher's Run, March 29, took position in front of the interior lines of the Petersburg defenses, April 2, during the assault on Fort Gregg, "one of the most desperate of the war."

"While the Army of the Potomac followed in the track of the enemy, the Army of the James and the cavalry advanced on their left and endeavored to head them off.

"General Lee succeeded in crossing the Appomattox, but upon arriving at the Court House found Sheridan's cavalry in his front, and the Army of the James on his left, while the Army of the Potomac followed hard upon his rear.

"General Foster's division entered the field and opened fire on the enemy who had gained the hill near Appomattox Court House. Lee, surprised at finding a division of infantry in front of him, at first gave ground, but seeing only a division, he attacked with the evident intention of cutting it off." The appearance of other troops fast coming up, however, soon proved the futility of such an attempt, and the white flag put an end to further hostilities.

Battery A had been assigned a position opposite the enemy's extreme right, and there engaged, thus dividing with Battery B, 1st Artillery, the honor of being one of the last two batteries engaged against the Army of Northern Virginia.

The II., V., VI. and IX. Corps, with batteries C-I, D-G and E, after various services of a minor character, proceeded to Washington and took part in the final review.

The XXIV. Corps remained in Richmond and its vicinity. Battery A was to be found at Lynchburg, Va., in October, '65, while F remained at Richmond three years later.

If losses are any indication of hard fighting, the Fifth can claim a high place in such a category. Of all the regular regiments, infantry, cavalry, and artillery, the four having the greatest average loss per unit of organization are the Thirteenth Infantry, 23.2; the Seventeenth Infantry, 20.6; the Twelfth Infantry, 20, and the Fifth Artillery, 20. The total loss of the Fifth is considerably larger than that of any other artillery regiment, and there are only five larger among all those of the Regular Army.

Burnham's battery, H, lost 44 at Chickamauga; Watson's, I, 22 at Gettysburg; McKnight's, M, 23 at Cedar Creek; Griffin's, D, 27 at Bull Run; Metcalf's section of C-I, 23 at the Salient, and DeHart's, C, 19 at Gaines Mill.

All the field officers originally commissioned in the regiment, besides most of the captains, became at one period or another either brigadier or major generals of volunteers. The fame of Generals Harvey Brown, T. W. Sherman, Barry, Getty, Griffin, Hunt, Hayes, Terrill, Ayres, Upton, Weed, Ames, Arnold and Williams, all officers of the same regiment, illumine the brilliant record which the Fifth Artillery earned during the War of the Rebellion.

XIV.

After the war, the regimental headquarters removed from Fort Richmond, N. Y. H., to Fort Monroe, Va., Oct. 25, '65, and there remained till June 10, '67, when it proceeded to Columbia, S. C. On Feb. 8, 1868, it went to Richmond, Va., and on Nov. 7 to Fort Jefferson, Fla.

Most of our batteries were withdrawn from the field the latter part of October, 1865, and occupied stations at Fort Macon, N. C.; Charleston, S. C.; Key West, Fort Jefferson and Barrancas, Fla. With the exception of Batteries F and G they turned in their horses and guns and became foot-batteries.

The regiment turned northward early in 1869 and took stations along the New England coast, from Fort Trumbull, Ct., to Fort Sullivan, Me., with headquarters at Fort Adams, R. I., excepting Battery G, which went to Plattsburg, N. Y., and Battery K, which in October, '73, abandoned Fort Sullivan for Madison Barracks, N. Y.

Bvt. Major General Henry J. Hunt, who had been promoted from major of the Fifth to lieut.-col. of the 3d Artillery, returned to the regiment as colonel, April 4, 1869, and assumed command about the middle of May.

During May, 1870, the Fenians made their attempted invasion of Canada, and A, B, E, H, I, G, L, M, left their stations and proceeded to the

scene of disturbance in northern New York and Vermont, returning early in June.

In the fall of 1875 the Fifth visited its old stations in the South, the headquarters going to Charleston, S. C., and later to McPherson Barracks, Ga. The batteries took post at Charleston, S. C., St. Augustine, Key West and Barrancas, Fla., and Savannah, Ga. When the headquarters moved to Atlanta, certain batteries that had garrisoned Savannah and Charleston took station at McPherson Barracks.

The railroad and coal strikes of 1877 took Batteries B, C, D, E, I and M to various towns in Pennsylvania, West Virginia and Maryland to aid in suppressing violence and protecting property.

During November, 1881, the regiment turned northward again and garrisoned the forts in New York Harbor with headquarters at Fort Hamilton.

General Hunt, who has left such a brilliant and enduring record as Chief of Artillery, Army of the Potomac, retired September 14, 1883, after being colonel for a little over fourteen years. He was succeeded by Colonel John Hamilton, the father of the present system of sea-coast target practice which was originated and developed to a certain point by the officers of the Fifth Artillery, under his direction.

Battery D, Captain Rawles, became a light-battery August 15, 1882, with station at Fort Omaha, Neb., from September 11, and later, Fort Douglas.

As the spring of 1890 approached, it became evident that another movement lay in store for the Fifth, and soon it could be found on "our westernmost frontier" garrisoning the posts in San Francisco Harbor, and Fort Canby, Wash., with headquarters at the Presidio of San Francisco.

Colonel Alexander Piper had assumed command of the regiment, August 10, 1887, but did not accompany it to the West, and retired not long after parting with it.

The railroad disturbances of 1894 took Battery B from Fort Canby for a time and it was engaged in guarding railroad property and in furnishing escorts for trains from Hope, Idaho, to Missoula, Montana and Sprague, Washington.

General Graham and staff with Batteries A, E, H, K and L proceeded to Sacramento, Cal., July 10, under orders from department headquarters, for the purpose of removing obstructions to the mails and to execute any orders of the U. S. Courts for the protection of property and to prevent interference of inter-state commerce.

Order having been satisfactorily restored, the batteries returned to their stations, Sept. 3, 1894. Here they now remain doing the round of garrison work under the orders of Bvt. Brigadier General William M. Graham, Colonel 5th Artillery, the intrepid commander of Battery K, 1st Artillery, at Antietam and of Horse-Battery K at Gettysburg.